Smithsonian

DECEMBER 1998

Making Snow

[PAGE 50]

©1998 Hewlett-Packard Company. *Estimated U.S. Retail Price.

HP DeskJet 722C, $299.*

HP Color Layering. Better color, no matter what you're printing.

You never know what you might need to print in color. Of course, whatever it is will be more colorful with PhotoREt Color Layering. Unlike conventional color

HEWLETT® PACKARD
Expanding Possibilities

printers, which place red dots next to yellow dots to create the illusion of orange, our process literally mixes the colors to create real orange. Or purple. Or tons of other colors. All at a faster print speed. Visit us at www.hp.com/go/colorlayering to learn more about our award-winning color inkjet printers.

dinner for 37, chez marcella: $2,416

one happy 50th birthday card: $1.95

one leopard-print, peekaboo nightie: $45

still being able to make her blush:

priceless

©1998 MasterCard International Incorporated

Platinum MasterCard® has a high spending limit

for the things that matter.

there are some things money can't buy.

for everything else there's MasterCard.™

www.mastercard.com

Sure, there are cleaner vehicles than a Honda.
But how long is your commute?

For more information about Honda's commitment to the environment, call 1-888-CC-HONDA, or visit us at www.honda.com. ©1998 American Honda Motor Co., Inc.

If the idea of sitting in bumper-to-skateboard traffic doesn't appeal to you, we have a better idea. In fact, several. The clean and fuel-efficient vehicles from Honda. Our low- and ultra-low-emission Accords and Civics now comprise the majority of cars we sell in America. And our natural-gas Civic GX and electric EV PLUS are

remarkably clean alternative-fuel vehicles. Best of all, these cars perform like, well, Hondas. You see, we've always been committed to balancing your desires for fun and performance with society's need for cleaner air and improved fuel economy. Which can be just about as difficult as balancing on a skateboard. With a briefcase. In a suit.

HONDA
Thinking.

60

98

82

SMITHSONIAN

features

DECEMBER 1998 ♜ VOLUME 29, NUMBER 9

50 **Let It Snow**
Ski resorts these days not only make the white stuff, they craft it—where, when and just the way they want it
BY CARL HOFFMAN ♜ PHOTOGRAPHS BY LAYNE KENNEDY

60 **The Age of Edo**
Dazzling artworks with pop culture themes—Kabuki actors, festivals and samurai—reflected a vibrant new era in old Japan
BY KENNETH BAKER

73 **Christmas Laundry**
Slipper shells, whelks and sun-dried bedsheets add a festive new wrinkle to one family's tree-trimming tradition
BY RICHARD CONNIFF ♜ ILLUSTRATIONS BY JEFF SEAVER

82 **Buffalo Soldiers**
Unsung heroes of the frontier, these African-American troops earned the respect of white comrades and their Indian foes
BY T. J. STILES ♜ ILLUSTRATIONS BY ARTHUR SHILSTONE

98 **Let's Root for the Coot**
This drab, lobe-footed marsh bird may not be much to look at, but given its numbers, it must be doing something right
BY KENNETH BROWER ♜ PHOTOGRAPHS BY MICHAEL SEWELL

112 **In Arizona, It's an All-Night Party for the Stars**
For a new breed of traveler, the "astronomical tourist," the state's clear, dark skies are a stellar attraction
BY DAVID DEVOSS

126 **Every Dog Has Its Day in Elliott Erwitt's New Book**
Dobermans and dachshunds, pugs and Pekes, are captured in pictures so fetching, you'll sit up and beg for another look

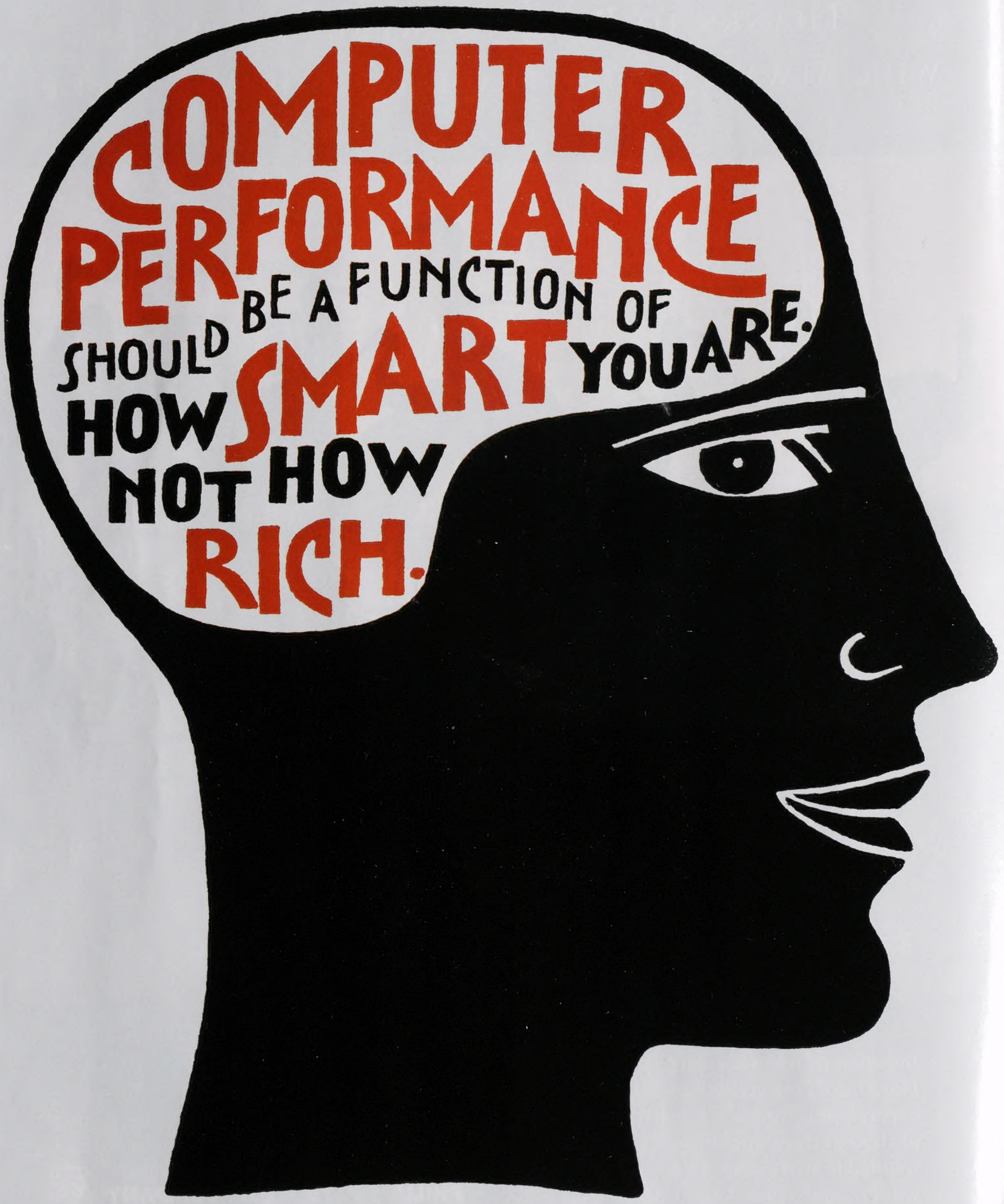
134 **In Ponzi We Trust**
The swindler is long gone, but his scheme, now popping up on the Internet, is still parting fools from their money
BY MARY DARBY

THANKS TO PHILLIPS, WEARY TRAVELERS
WILL ALWAYS HAVE A PLACE TO STOP AND REFUEL.

By donating a former plant site to the Cactus Playa Lake Project, Phillips Petroleum helped expand and protect the habitat of hundreds of thousands of migratory birds. The project resulted from the cooperative effort of Phillips, wildlife and conservation agencies and the community of Cactus, Texas. Now bald eagles, waterfowl and dozens of other bird species have a better place to rest along the Central Flyway. It's yet another example of what it means to be The Performance Company.

PHILLIPS PETROLEUM COMPANY

For a copy of our annual report, call 918-661-3700, write to: Phillips Annual Report, B-41, Adams Bldg., Bartlesville, OK 74004, or visit us at www.phillips66.com.



Cyrix is a wholly owned subsidiary of National Semiconductor Corporation. Cyrix is a registered trademark and M II and The Liberation of Information are trademarks of Cyrix Corporation. All other brand or product n es are

It is our mission to help create a democratic computer society where the currency is brains, not money. Where the power passes from the grasp of the elite to the hands of the people. Where those who were denied access are now free to use the Internet and run the latest, most popular multimedia applications. Cyrix® has made this possible with powerful, highly integrated processors that make the mind-expanding capabilities of the PC available for well under $1,000. Without compromise. We are the only chip maker totally dedicated to the creation of powerful entry-level PCs. Visit www.cyrix.com. And go check out the new MMX™-enhanced, Cyrix processor-based Compaq Presario, NEC and Packard Bell systems. Powerful PCs to the people.

Cyrix®
A National Semiconductor Company

THE LIBERATION OF INFORMATION™

trademarks or registered trademarks of their respective holders. ©1998 Cyrix Corporation. All rights reserved.

SMITHSONIAN

departments

DECEMBER 1998 ♜ VOLUME 29, NUMBER 9

Cover

Cover Dan Casey checks the snow quality on the Half-Pipe, an area built for snowboarders at the Sunday River resort, near Bethel, Maine. Optimal snow gun settings are set by computer, but snowmakers still inspect the snow every two hours.
PHOTOGRAPH BY LAYNE KENNEDY

22 Letters to the Editor

156 Additional Sources

158 Smithsonian Study Tours

18 Smithsonian Perspectives
Our Future in Flight
BY SECRETARY I. MICHAEL HEYMAN

28 Phenomena, Comment & Notes
Coming to Terms
BY JOHN P. WILEY, JR.

34 Around the Mall & Beyond
The Steam Locomotive
BY MICHAEL KERNAN

38 Smithsonian Highlights
The Beauty in the Blight
Highlights Calendar starts on page 40

44 The Object at Hand
Keepers of the Flame
BY PAULETTE DININNY

150 Book Reviews
Tea That Burns: A Family Memoir of Chinatown by Bruce Edward Hall
Red-Tails in Love: A Wildlife Drama in Central Park by Marie Winn

160 The Last Page
The Backseat Driver that Sits in Front
BY LEWIS M. SIMONS

44

Island Vacations

≈

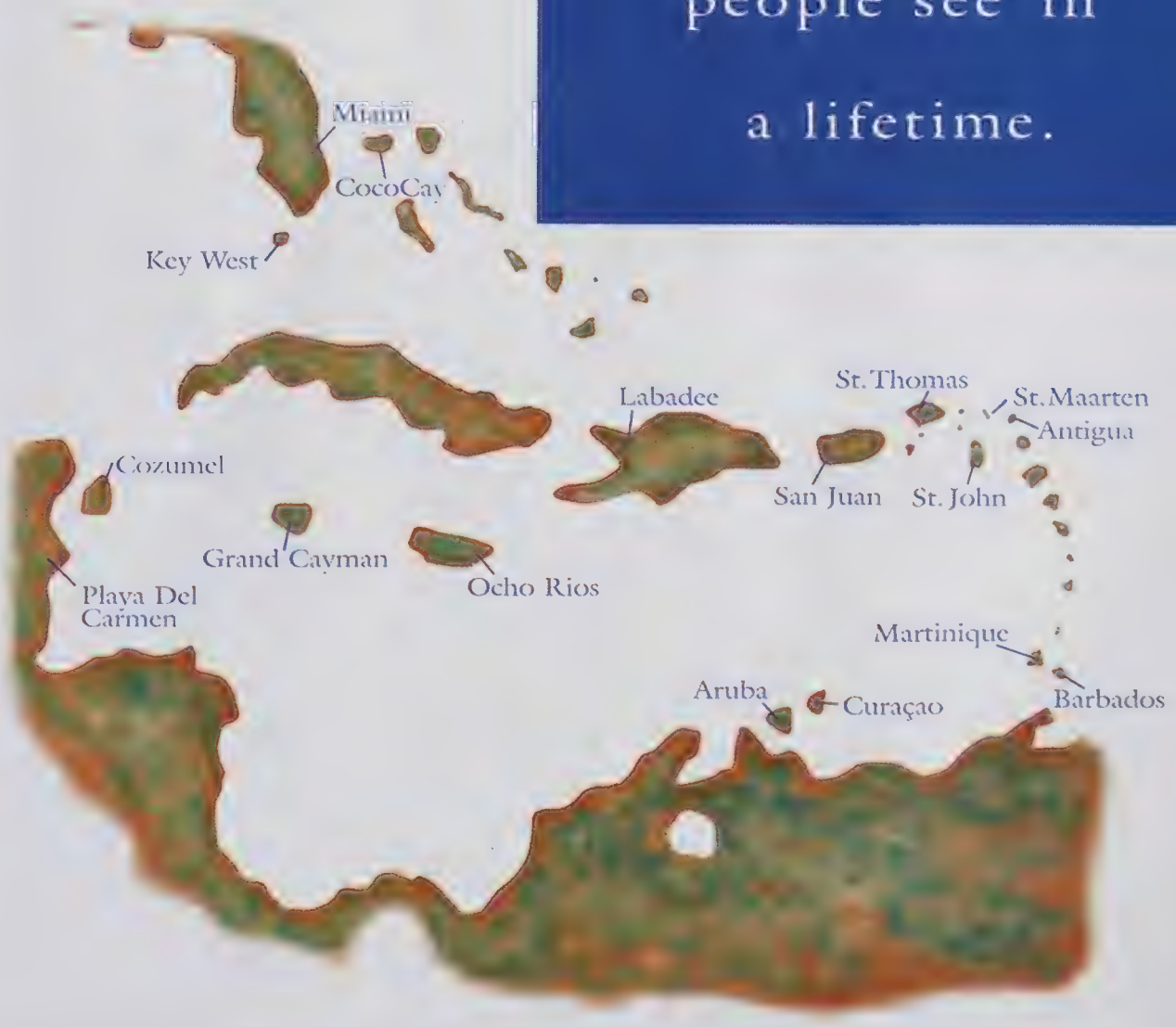
Bahamas
Caribbean
Private Islands:
CocoCay
Labadee

See more islands in a week than most people see in a lifetime.

Breathe mango-spiced air.

Dance in aquamarine waves.

Sing. Play. Love. Island after island, you can live life the way most people just dream about. And, cruise to more destinations in one vacation than you thought possible. Just call your travel agent or 1-888-859-7692, ext. 809 for more information. Listen. The calypso is calling you.



RoyalCaribbean® INTERNATIONAL

Like no vacation on earth.℠

www.royalcaribbean.com

©1998 Royal Caribbean Cruises Ltd. Ships of Norwegian and Liberian Registry.
A one-week cruise includes up to six destinations.

STOCKHOLDE

Your most important meetings don't have agendas. Rather, they're get-togethers with people you love. To help protect them, LeSabre has an impressive list of standard safety features, like anti-lock brakes. Because these days, safety is really something to take stock in. Visit www.lesabre.buick.com or call 1-800-4A-BUICK.

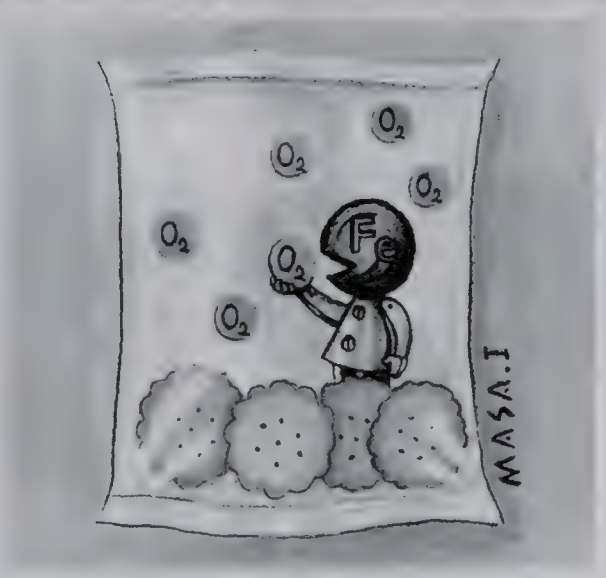
GM® ©1998 GM Corp. All rights reserved. LeSabre is a registered trademark of GM Corp. Buckle up, America!

RS MEETING

LeSabre by Buick

PEACE OF MIND

The Wonder of Iron-9



A packet of oxygen absorbers containing iron (Fe) removes free oxygen from a package of food. This prevents the growth of mold, insects, and bacteria, as well as inhibits discoloration.

Iron Keeps Food Fresh

By Yoshihiro Ogawa

In Japan, oxygen absorber packs have been used in pre-wrapped foods for well over 15 years to preserve freshness. Oxygen absorbers remove all the free oxygen from inside the bag, preventing the growth of mold, insects, and bacteria, as well as inhibiting discoloration. Because this method of preservation is extremely simple, it has revolutionized the distribution of the food industry in Japan.

Oxygen absorber packs, based on iron powder, an inorganic material, have the dual advantage of low cost and stability. Iron based oxygen absorbers are effective because iron rusts easily, extracting oxygen to form the rust. A chloride or similar compound is added to increase the reactivity. The actual reaction mechanism is very complex, but it can be considered simply as follows:

$$Fe + 3/4\ O_2 + 3/2\ H_2O \rightarrow Fe\ (OH)_3$$

The use of oxygen absorbers has helped to enhance both the taste and convenience of the extremely wide range of foods now available in Japan, and makes up 90 percent of the market. A diversity of special-use oxygen absorbers are being developed for such products as microwave foods and frozen and fresh products, including fish and meat. Because of their practical advantages, oxygen absorbers are allowing regional specialty foods to be shipped throughout the country and have indeed spurred on the current gourmet boom in Japan.

About the Author:
Yoshihiro Ogawa graduated from the Faculty of Engineering at Yamaguchi University. He is a director of the Technical Engineering Division at Nittetsu Fine Products Co., Ltd., part of the Nippon Steel group, which produces and sells oxygen absorbers.

NIPPON STEEL

Nippon Steel Corporation/Public Relations Center
6-3, Otemachi 2-chome, Chiyoda-ku, Tokyo 100-71, Japan
Tel: 813 3242 4111/Fax: 813 3275 5607
http://www.nsc.co.jp

Smithsonian

SECRETARY OF THE SMITHSONIAN INSTITUTION
I. Michael Heyman

EDITOR
Don Moser

BOARD OF EDITORS
Kathleen M. Burke
Suzanne Crawford
Jim Doherty
Timothy Foote
Marlane A. Liddell
Sally Scott Maran
Edgar Rich, *Pictures*
John P. Wiley, Jr.

ASSOCIATE EDITORS
Diane M. Bolz
Bruce Hathaway
Lucinda Moore
Beth Py-Lieberman
Ruth Ravenel
Bonnie Stutski, *Pictures*

ASSISTANT EDITORS
Caneel Cotton, *Pictures*
Elizabeth J. Erskine
Lyn Garrity
Marian Smith Holmes
Valerie Jablow
Karen Larkins
Alison C. McLean
Christian Moen
Minna Morse
Sadie Quarrier, *Pictures*

ARTICLES ASSISTANT
Angela M. Pleasants

RESEARCH ASSISTANTS
Karla A. Henry
Carolyn McGhee

CONTRIBUTING EDITORS
Constance A. Bond
Edwards Park
Bennett Schiff
Nancy Seaman
Paul Trachtman

Smithsonian Institution

BOARD OF REGENTS

EX OFFICIO
Chief Justice of the United States, William H. Rehnquist, *Chancellor*
Vice President of the United States, Albert Gore, Jr.

APPOINTED BY THE PRESIDENT OF THE SENATE
Hon. Thad Cochran
Hon. Bill Frist
Hon. Daniel P. Moynihan

APPOINTED BY THE SPEAKER OF THE HOUSE
Hon. Sam Johnson
Hon. Bob Livingston
Hon. Esteban E. Torres

APPOINTED BY JOINT RESOLUTION OF CONGRESS
Hon. Howard H. Baker, Jr.
Hon. Barber B. Conable, Jr.
Ms. Anne d'Harnoncourt
Mr. Louis V. Gerstner, Jr.
Dr. Hanna H. Gray
Dr. Manuel L. Ibáñez
Dr. Homer A. Neal
Mr. Frank A. Shrontz
Mr. Wesley S. Williams, Jr.

SMITHSONIAN NATIONAL BOARD

Hon. Frank A.Weil, *Chair*
Hon. Max N. Berry, *Vice Chair*

Mrs. Laura Lee Blanton
Mrs. Carolyn Blount
Mrs. John M. Bradley
Mr. Stephen F. Brauer
Hon. Henry E. Catto
Mr. Peter R. Coneway
Mr. Thomas E. Congdon
Mr. Frank Arthur Daniels, Jr.
Mr. Archie W. Dunham
Dr. Sylvia Earle
Mrs. Jane Eisner
Mrs. Patricia Frost
Ms. Nely Galan
Mr. Bert Getz
Mr. Stephen Hamblett
Mr. Paul Hertelendy
Mr. Roger Horchow
Mr. Robert L. James
Mrs. Dona Kendall
Mrs. James Kinnear
Mrs. Marie L. Knowles
Hon. Marc Leland
Mr. Donald G. Lubin
Ms. Elizabeth S. MacMillan
Mr. John Macomber
Mrs. John W. Madigan
Mr. Frank N. Magid
Mrs. Millicent Mailliard
Mrs. John F. Mars
Mr. Michael P. McBride
Mrs. Nan Tucker McEvoy
Mr. Kenneth B. Miller
Hon. Norman Y. Mineta
Mr. Thomas D. Mullins
Mr. John Nelson
Mrs. Joan Noto
Mr. Heinz C. Prechter
Mrs. Charles H. Price
Baron Eric de Rothschild
Mr. A. R. Sanchez
Mr. David M. Silfen
Hon. Alan K. Simpson
Ms. Kathy Daubert Smith
Mr. Kenneth L. Smith
Mr. C. D. Spangler
Mr. Kelso F. Sutton
Mrs. Nancy Brown Wellin
Mr. Anthony Welters
Mr. Daniel W. Yohannes

HONORARY MEMBERS
Mr. Robert McC. Adams
Mr. William S. Anderson
Mr. Richard P. Cooley
Mr. Joseph F. Cullman III
Mr. Charles D. Dickey, Jr.
Mr. Alfred C. Glassell, Jr.
Mrs. Jean Bronson Mahoney
Hon. George C. McGhee
Justice Sandra D. O'Connor
Mr. S. Dillon Ripley
Mr. Francis C. Rooney, Jr.
Mr. Wilbur L. Ross, Jr.
Mr. Lloyd G. Schermer
Mrs. Gay F. Wray

Place yourself in a
51.100 km² mould

Heat under the Caribbean
or Pacific sun

Serve with a typical Guaitil pot

Taste the difference

COSTA RICA

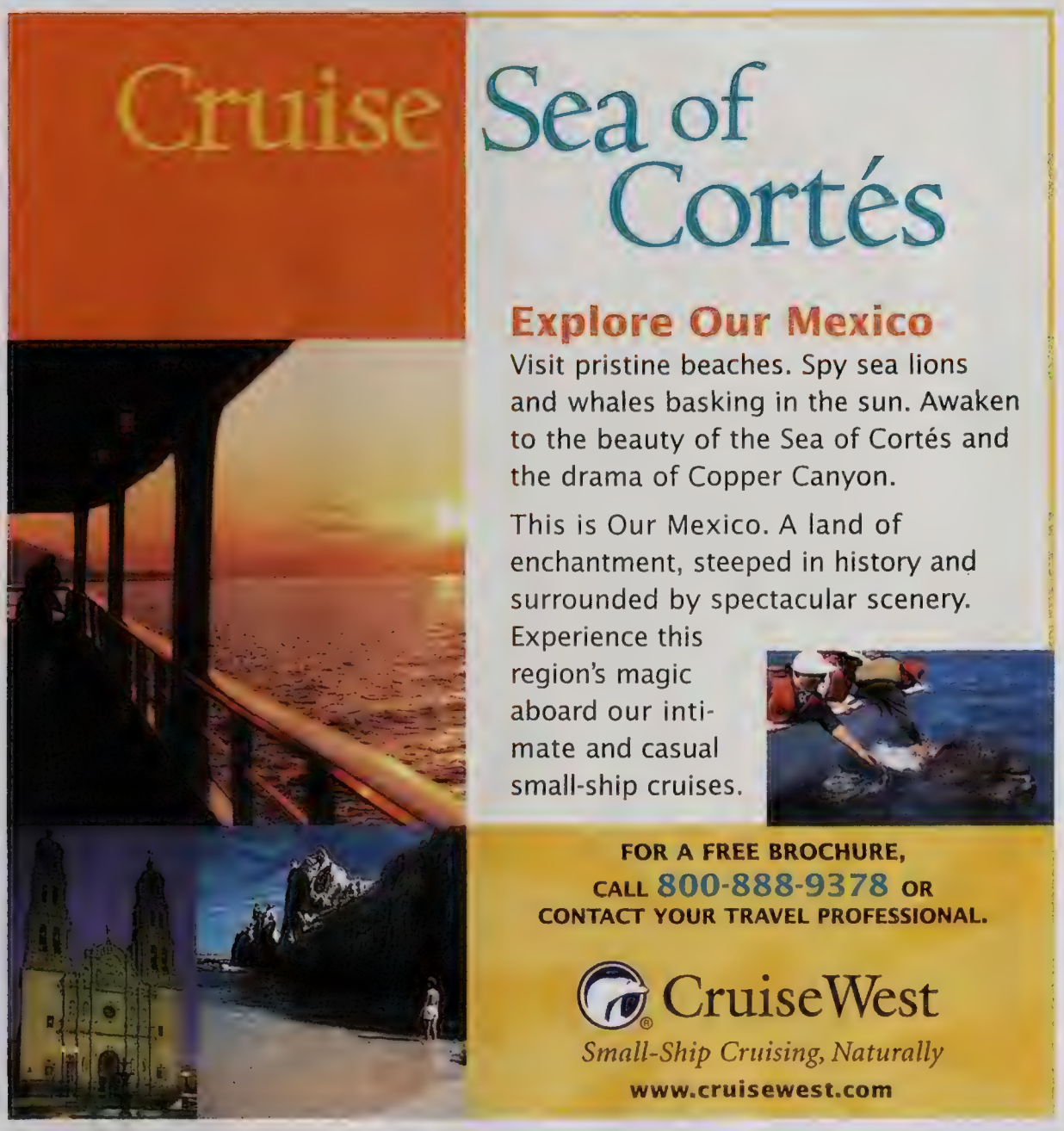
NO ARTIFICIAL INGREDIENTS

1-800-343-6332

http://www.tourism-costarica.com

ICT COSTA RICA TOURIST BOARD

McCANN ERICKSON COSTA RICA


Cruise
Sea of Cortés
Explore Our Mexico
Visit pristine beaches. Spy sea lions and whales basking in the sun. Awaken to the beauty of the Sea of Cortés and the drama of Copper Canyon.
This is Our Mexico. A land of enchantment, steeped in history and surrounded by spectacular scenery. Experience this region's magic aboard our intimate and casual small-ship cruises.
FOR A FREE BROCHURE,
CALL 800-888-9378 OR
CONTACT YOUR TRAVEL PROFESSIONAL.
CruiseWest
Small-Ship Cruising, Naturally
www.cruisewest.com

Smithsonian

EDITORIAL & PUBLISHING OFFICES:
900 Jefferson Drive, SW
Rm 1301, MRC 406
Washington, D.C. 20560

INTERNET ADDRESS:
www.smithsonianmag.si.edu

SUBSCRIPTIONS: 1-800-766-2149
[outside of U.S., call 1-904-445-4662]

PUBLISHER
Ronald C. Walker
Michelle A. McMahon,
Executive Assistant

ADMINISTRATION
Carey O. Randall,
Associate Publisher
Valerie Martin,
Business Manager

CIRCULATION
Liberta Abbondante, *Director*
Carolyn Topak,
Marketing Director
Elizabeth Hopkins,
Planning Director
Andrea Sole, *Fulfillment Director*

PRODUCTION
E. Cherry Doyle, *Director*
Greg Williams, *Quality Manager*
David Sterling, *Editorial*
Marilyn S. Greene, *Advertising*

ADVERTISING
David C. Cator, *Director*
Hamlin M. Gilbert, Jr.
Advertising Services Director
Lorraine Sakli, *Marketing Director*

NEW YORK 420 Lexington Avenue
Suite 1945, New York, NY 10170-0084
212-490-2510 ◆ fax: 212-986-4259

ATLANTA Brown & Company
770-998-2889 ◆ fax: 770-552-8250

CHICAGO Warden, Kelley, Allen & Opfer
312-575-1100 ◆ fax: 312-575-1107

DETROIT Heth & Associates Inc.
248-642-7273 ◆ fax: 248-642-1321

LOS ANGELES
Charles E. Schmuck & Associates
310-478-3833 ◆ fax: 310-478-1633

PHILADELPHIA
William H. Dixon Associates
610-696-2807 ◆ fax: 610-692-5177

SAN FRANCISCO
Charles E. Schmuck & Associates
415-986-1945 ◆ fax: 415-986-1159

TOKYO
International Communications Inc.
81-33-593-1441 ◆ fax: 81-33-580-0414

MEXICO
Towmar Representaciones Profesionales
525-395-5888 ◆ fax: 525-395-4985

FOUNDERS
S. Dillon Ripley
Edward K. Thompson

PUBLISHER EMERITUS
Joseph J. Bonsignore

HEAR WHY THE BOSE® WAVE® RADIO WAS NAMED A "BEST NEW PRODUCT OF 1994" BY *BUSINESS WEEK*.

Tabletop radios are popular for their convenience and small size. But their sound quality leaves much to be desired. No one really expects high-fidelity sound from a radio. Until now.

Set six AM and six FM stations.

Easily connect your CD player, cassette player, TV, or VCR.

Just as a flute strengthens a breath of air to fill an entire concert hall, the waveguide produces room-filling sound from a small enclosure. This technology and performance is available in no other radio.

You'll touch a button and hear your favorite music come alive in rich stereo sound. You'll hear every note the way it's *meant* to be heard. The Wave radio measures just 4⅛"H × 14"W × 8¼"D and fits almost anywhere. So you can listen in your bedroom, living room, kitchen, or any room. And with your choice of imperial white or graphite gray, the Wave radio not only fits in any room, it fits any decor.

CALL NOW AND MAKE SIX INTEREST-FREE PAYMENTS.

The Wave radio is available for $349 directly from Bose, the most respected name in sound. So call 1-800-681-BOSE, ext. R9725, to learn more about our in-home trial and 100% satisfaction guarantee. When you call, be sure to ask about our six-month installment payment plan.

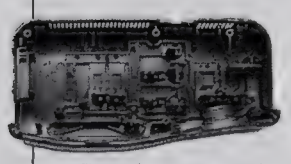
HEAR THE RADIO THAT WOKE UP AN ENTIRE INDUSTRY.

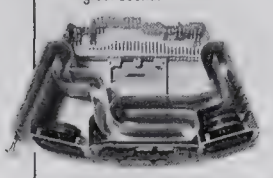
Bose presents the Wave radio. It's the one radio acclaimed by leading audio critics. Because it's the one radio that delivers big, rich, lifelike stereo sound *plus* a small, convenient size.

Wired magazine said it has a "clean, sweet sound that will have your friends wondering where you've hidden your fancy speakers." But you have to hear the Wave radio for yourself to believe it.

THE BEST-SOUNDING RADIO YOU CAN BUY.

We think the Wave radio is the best-sounding radio you can buy. And audio critics agree.

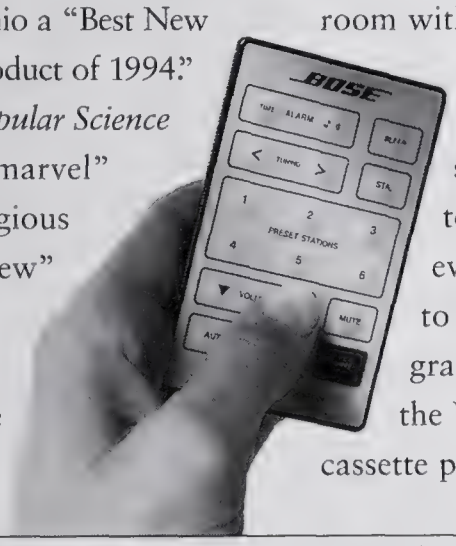

The speakers in conventional radios cannot produce lifelike bass, which is essential for great sound.


Only the Wave radio with acoustic waveguide speaker technology produces high-quality sound with full, rich bass.

Radio World called the sound "simply amazing... a genuine breakthrough in improved sound quality." *Business Week* named the Wave radio a "Best New Product of 1994." *Popular Science* called it "a sonic marvel" and gave it a prestigious "Best of What's New" award. The key is our patented acoustic waveguide speaker technology.

REMOTE-CONTROLLED CONVENIENCE.

Operate the radio from across the room with the credit card-sized remote control. Set six AM and six FM stations, and switch between them at the touch of a button. You can even bring great Bose sound to recorded music, TV programs, or movies by connecting the Wave radio to your CD or cassette player, TV, or VCR.



FOR FREE SHIPPING, ORDER BY DECEMBER 31, 1998.

CALL TODAY, 1-800-681-BOSE, EXT. R9725.

For information on all our products:
www.bose.com/r9725

Our six-month installment payment plan is available on telephone orders only.
Please specify your color choice when ordering the Wave® radio:
☐ Imperial White ☐ Graphite Gray

Mr./Mrs./Ms. _____
Name (Please Print) _____
Address _____
City State Zip _____
( ) _____
Daytime Telephone
( ) _____
Evening Telephone

Mail to: Bose® Corporation, Dept. CDD-R9725, The Mountain, Framingham, MA 01701-9168.

BOSE®
Better sound through research.®

©1998 Bose Corporation. Covered by patent rights issued and/or pending. Installment payment plan and free outbound shipping offer not to be combined with any other offer. Installment payment plan available on credit card orders only. Price does not include applicable sales tax. Price and/or payment plan subject to change without notice. Frank Beacham, *Radio World*, 12/93. *Wired*, 6/94.

SMITHSONIAN

PERSPECTIVES

Our Future in Flight

WITH A NEW FACILITY IN THE WORKS, THE NATIONAL AIR AND SPACE MUSEUM PREPARES FOR THE 21ST CENTURY

AS THE SMITHSONIAN ENTERS A NEW MILLENNIUM, and we undertake a coordinated effort to raise significant private funds, I will be devoting a number of *Smithsonian Perspectives* to individual museums and research facilities. This column looks at our (and the world's) most visited museum: the National Air and Space Museum (NASM).

The twin sciences of aviation and spaceflight hardly seem new to us, but of the many subjects covered by the Smithsonian they are among the youngest. The past 100 years have witnessed the Wright brothers' first flight, on December 17, 1903, and the lunar landing of Apollo 11, nearly 30 years ago. These achievements and other evidence of origins and growth are reflected at NASM.

The Smithsonian's aeronautical collection began with the acquisition of a group of kites from the Chinese Imperial Commission at the 1876 Centennial Exposition in Philadelphia. It has grown to include more than 30,000 artifacts, and it is the world's definitive aerospace collection. The 1903 Wright Flyer; the *Spirit of St. Louis;* the sound-barrier-breaking Bell X-1, *Glamorous Glennis;* and the Apollo 11 command module, *Columbia,* are all on display in "Milestones of Flight," the central hall of NASM. And while more than half the museum's 23 exhibition galleries have changed in the past 20 years, "Milestones of Flight" appears much the same as it did two decades ago.

The museum visitor, however, has changed, and so have our means of presentation. When the National Air and Space Museum opened in 1976, nearly all the visitors who walked through its doors could say exactly where they were when astronaut Neil Armstrong took his "one small step" into the annals of history. Many remembered John Glenn's Mercury spaceflight aboard *Friendship 7* (also on display in "Milestones"). The museum's visitors had personal memories of and emotional ties to these and other aircraft and spacecraft on display.

Today's visitors, however, are far less likely to have such a personal connection to the artifacts. Museum staff must, therefore, pay careful attention to accompanying exhibit materials, which provide the context that allows visitors to understand and appreciate what is before them. When we do our job well, a teenager born decades after the achievements of the Wrights, Lindbergh, Earhart or Yeager can still marvel at the technological accomplishments and appreciate the bravery of the pilot and crew. Together, the National Air and Space Museum's twin responsibilities—preservation and presentation—ensure that visitors, educators and researchers can continue to follow aviation and spaceflight advances into the next century.

How does the world's most visited museum prepare for the new millennium? For a decade the Smithsonian has been planning a facility that would serve as an extension of the National Air and Space Museum. Plans are now nearly complete for a world-class restoration center and museum at Dulles International Airport in Chantilly, Virginia, 26 miles from Washington. This state-of-the-art facility will allow visitors to observe NASM's staff as they restore the aircraft and spacecraft in our extraordinary national collection.

The 710,000-square-foot extension, large enough to hold the current Air and Space Museum, will exhibit more than 200 craft—suspended from the ceiling at two levels as well as displayed on the floor. It will also feature an education center and simulation exhibits, allowing visitors to study the history and future of air and space travel.

The Dulles Center will be a true public-private partnership. Congress has provided $8 million for the center's design, and Virginia will provide $39 million for the infrastructure: roads, parking and utilities.

The cost of building construction, however, must come from private sources. The National Air and Space Museum must raise the $130 million needed to build the facility. We will ask those who revere the memory of our air and space pioneers, and those who are committed to inspiring future discoverers, to help us meet this challenge.

We plan to complete the Dulles Center and open it to the public before December 17, 2003, in time to celebrate the centennial of the Wright brothers' first flight.

Samuel Pierpont Langley (Smithsonian Secretary from 1887 to 1906), well known for his studies in aviation and astronomy, would be impressed that we are preparing for the exciting advances yet to occur.

I. MICHAEL HEYMAN, SECRETARY

Get a new perspective on the internet. A three dimensional one.

AMD K6-2 3DNOW!

The AMD-K6-2 Processor with 3DNow! Technology

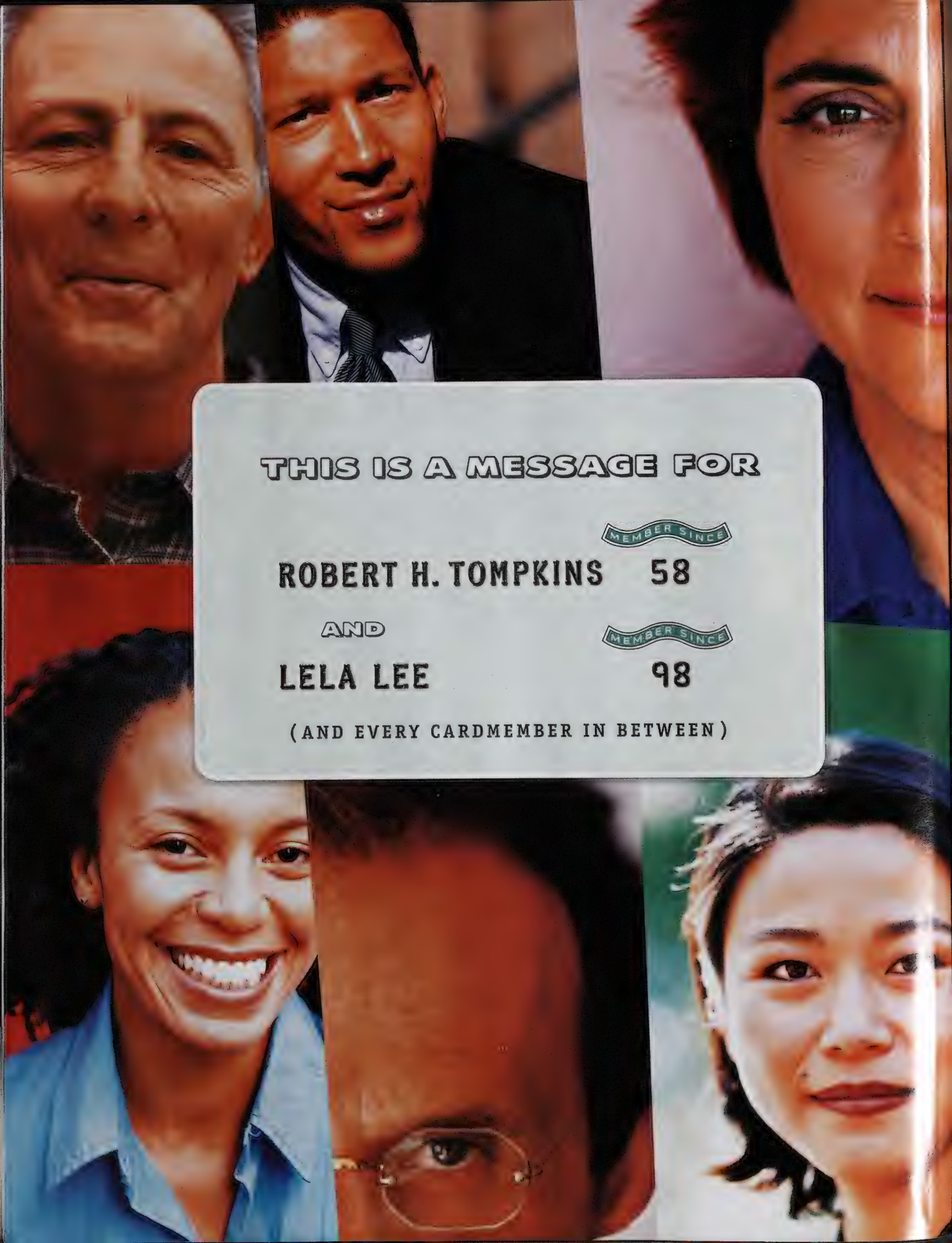
Presenting the next dimension in PC technology.

Walk around a bike. Open your doors to e-commerce. Even give your customers a 3D view of your business. It all begins with a system based on the AMD-K6®-2 Processor with 3DNow!™ Expect sharp 3D imaging, smooth video playback and incredibly fast multimedia. Even sound is more lifelike. Of course, your current Windows® applications run at lightning speed. And our new 3DNow! technology lets you see the latest 3D applications the way they were meant to be seen. The fact is, the AMD-K6-2 Processor with 3DNow! has the power to outperform Pentium® II.* More importantly, it has the power to add a new dimension to your internet experience. Get more information. Visit us at www.amd.com/bike.

AMD

www.amd.com

© 1998 Advanced Micro Devices, Inc. AMD, the AMD logo, K6, 3DNow!, and combinations thereof are trademarks of Advanced Micro Devices, Inc. Pentium is a registered trademark of the Intel Corporation. Windows is a registered trademark of Microsoft Corporation. All other products are trademarks of their respective companies. *Comparison based on 3D Winbench™ 98 benchmark scores using pre-released software (5/98).


THIS IS A MESSAGE FOR
MEMBER SINCE
ROBERT H. TOMPKINS 58
AND
MEMBER SINCE
LELA LEE 98
(AND EVERY CARDMEMBER IN BETWEEN)

It may seem an obvious thing to say, but each of you use your American Express® Card in different ways. Perhaps not so obviously, we recognize that and offer each and every one of you a more personal style of service.

This can mean special treatment at your favorite stores, a complimentary ride home from the airport when you've been traveling, and a rewards program that's designed to suit your particular tastes and preferences. In fact, it can mean any number of new rewards and benefits–all based on how you choose to use your Card.

Naturally, we're always just a phone call away whenever you have a problem, an emergency or a question. And you can always rely on us for help and assistance 24 hours a day, no matter where you are in the world.

With this level of personalized service, we'll continue to demonstrate that there is a difference between being a card holder and being a Cardmember. The difference is membership. Call 1-800-THE-CARD to apply or visit us at www.americanexpress.com

do more.

©1998 American Express. 1-800 Limo Center Service: Terms and conditions apply.

RAH, RAH RUFFIANS!

HEARTY APPLAUSE TO BIL GILBERT for his article, in the October issue, on the names of college and university sports teams, though he did not mention the crimson and blue Jayhawks of my alma mater, the University of Kansas.

The mythical bird is believed to be a combination of the blue jay and the hawk. Some 19th-century pioneers who were crossing what was then Nebraska called themselves the "Jayhawkers of '49." The word was first used in present-day Kansas in about 1858 and was associated with looting, robbing and general lawlessness. A few years later, during the Civil War, it referred to the abolitionist guerrillas operating in Missouri and Kansas to keep those states free. The university is in Lawrence, the site in 1863 of bloody Quantrill's Raid, a retaliatory action against the jayhawkers. By 1866, KU at Lawrence had adopted the jayhawk as part of its yell.

Letha Curtis Musgrave
Atascadero, California

WE IN OREGON ARE APPARENTLY A bit more gentle than the rest of the country. The University of Oregon is the only school in the world that is allowed to use a Walt Disney character as its mascot. A fierce-looking Donald Duck, wearing a green sailor suit with yellow trim, is the symbol of the university's Ducks.

Carol Busby Cricow
Eugene, Oregon

I FOUND YOUR ARTICLE ENTERTAINing yet lacking. When Bil Gilbert listed the mascots that he found particularly disturbing to domestic tranquillity, he omitted the fighting Missionaries of Whitman College in Walla Walla, Washington. The amusing caricature of my school's mascot shows a man with a rifle in hand and a vengeful grin.

Abigail St. Lawrence
Walla Walla, Washington

AS AN ALUMNA AND FORMER STUdent athlete of Williams College in Williamstown, Massachusetts, I must correct Bil Gilbert's assertion that there are no collegiate teams represented by cows. Williams athletes are proudly known as the Purple Cows.

It is true that Purple Cows are not fierce beasts. And the women's cross-country team cheer of "Moooooooo!" most likely did not strike fear in the hearts of our opponents. But this cherished mascot at least promoted a sense of humor among the student body—certainly an essential part of a strong character.

Sarah G. Mitchell
Brooklyn, New York

THE DEMON DEACONS OF WAKE Forest University in Winston-Salem, North Carolina, are a unique combination of the satanic and the clerical.

Glenn Sugameli
Arlington, Virginia

AFTER THE SCHOOL OPENED IN 1965, the University of California at Santa Cruz had the Banana Slug as its unofficial mascot for all its coed teams. The bright-yellow mollusk, which is hermaphroditic and mates both ends at once with another banana slug, is found in UCSC's redwood forest.

In 1981, the chancellor of the university polled the student athletes, asking them for an official team name. They chose the Sea Lions. For the next five years, the majority of the student body continued rooting at games for the mollusk. In 1986, while I was a student at UCSC, we voted overwhelmingly to retain the homely, nonaggressive Banana Slug.

Kirsten L. Anderson
Berkeley, California

THE UNIVERSITY OF CALIFORNIA'S San Francisco campus has no undergraduate programs and, hence, no athletic program or mascot. Several years ago the student newspaper *Synapse* held a contest to name a mascot that was appropriate to the campus's exclusive concentration on the health sciences. Killer T-Cells was a strong contender, but the winning entry was Drosophila, the Latin genus for the fruit fly. Administrators and medical personnel made up the only team, which played noontime pickup basketball. Players kept getting paged to attend to some emergency at the hospital or the office, however, and ran off the court.

Carol Copperud
Oakland, California

ALTHOUGH BIL GILBERT'S ARTICLE concerned nicknames of college and university teams, I would like to call your attention to Poca High School in Poca, West Virginia.

Both the male and the female teams compete as the Poca Dots.

Bob Hall
Charleston, West Virginia

OLD-TIME BASEBALL

YOUR READERS MAY BE INTERESTED in Darryl Brock's *If I Ever Get Back*, a novel that follows the fortunes of the Cincinnati Red Stockings (the parent

STARTS AT $29,995*

*MSRP does not include $575 destination charge. Taxes, insurance, title, registration fees and optional equipment extra. ©1998 SAAB CARS USA, INC.

1 800 SAAB USA www.saabusa.com

95

DO BABY SEATS AND TURBOCHARGERS MIX?

Your child's first car trip. You drove home from the hospital, overwhelmed by a strange and powerful instinct to protect. Now, it's a run to your child's activity du jour. In a turbo-charged Saab 9-5, that means quick acceleration when passing or merging. Which is as much about safety as it is about power. If you're a parent, the 9-5 is for you. And, if you listen to your instincts, for your children, too.

SAAB

team of the present Boston Red Sox). It was the first professional team to go west to California, making its historic journey in 1869 on the just-completed Union-Pacific Railroad.

Brock opens a window on mid-19th-century baseball, using real players of the era for his team characters.

Norman Rudnick
Oakland, California

IN HIS WONDERFUL STORY ON VINtage baseball, Doug Stewart meant to refer to his "automatic" not "autonomic" nervous system. The latter covers all nerve functions except the contractions of voluntary skeletal muscle, which are what he used to avoid a hurtling ball.

Paul J. Kopsch, M.D.
Lorain, Ohio

FRANKINCENSE TRAIL

I FOUND DAVID ROBERTS' ARTICLE about the retracing of the Incense Road in Yemen both interesting and informative. I feel, however, that something is missing. You did not show a picture of the frankincense tree. The author noted that he, photographer Kay Chernush and the members of the expedition saw only one of the rare trees.

Dorothy M. Young
Cassopolis, Michigan

The lone tree stands above. Ed.

SEVERAL GENTLEMEN NOT MENTIONED in your article made our expedition possible: Dr. Yusef Abdullah, Abdu Ali Saeed, Muamar Al-Amri and Abdulbaset Al-Namaan, and our stalwart Bedouin friends Mohain Khureis Al Kathiri and Abdullah bin Muhamed Al Kathiri.

George R. Hedges
The Archaeology Fund
Los Angeles, California

AROUND THE MALL & BEYOND

I ENJOYED MICHAEL KERNAN'S COLumn concerning the Star-Spangled Banner. Everyone has an American flag "moment" stitched in him or her. Mine began shortly before the Big Three met for the Potsdam Conference. Maj. Gen. Floyd Parks, the designated U.S. Sector Commander for the occupation of Berlin, pointed at a cardboard box on his desk and said to me, "Tell me what to do with this." Inside was a dirty American flag. An accompanying note said that the flag was flying over the East Front of the U.S. Capitol when the Japanese attacked Pearl Harbor.

In 1944, Texas congressman Maury Maverick suggested to President Roosevelt that the flag be known as the Flag of Liberation and that it be entrusted to the U.S. Army. It flew over Allied-occupied Rome, and now it was to fly over Germany.

Hermann Göring's old Luftwaffe building had not yet been turned into the Office of Military Government for Germany (OMGUS), so we asked President Harry S. Truman to dedicate the building. On July 20, 1945, the Flag of Liberation again flew, and Truman announced that the United States had no territorial claims and wanted only that everybody go home in peace and prosper.

I repacked the box and shipped it by air to Washington. It was then sent to be part of the September 2, 1945, Japanese surrender aboard the USS *Missouri*.

In 1947, General Parks asked me to come back to work for him at the Pentagon. The drawers of my newly assigned desk were empty save one that contained an old cardboard box that held, incredibly, the same flag. With it was a note signed by Douglas MacArthur, saying that the flag had, as requested, been flown on the *Missouri*. I arranged to have the still-dirty flag carried on April 6, 1948, by uniformed men and women, representing all branches of the military that had served in WWII, and delivered to Congress. The Flag of Liberation is now in the custody of the Architect of the Capitol.

Col. Barney Oldfield, USAF (Ret.)
Los Angeles, California

I HAVE ALWAYS SUSPECTED THAT IN Washington, D.C. the math was a little different, but here in upstate New York, 1,762,560 stitches times 2 snips equals 3,525,120. Perhaps the extra 440 in your total covers the stitches tax.

Timothy P. Murray
Ballston Lake, New York

TERMITES

RICHARD CONNIFF'S ARTICLE ON the "covert destroyer," the termite, reminded me of the Ogden Nash poem to the same: "Some primal termite knocked on wood / And tasted it, and found it good / And that is why your Cousin May / Fell through the parlor floor today."

James K. Crawford
Des Moines, Iowa

WRITE TO SMITHSONIAN

Transmit mail for consideration in this column to **LettersEd@simag.si.edu** or post it to Letters Editor, P.O. Box 44400, Washington, DC 20026-4400.

Also available in pearl white.

THIS SPORTY LITTLE COMPACT IS LOADED.

After decades of creating the world's finest sound systems, JBL introduces an exceptional, multi-function stereo on one snazzy little chassis for less than $400. Introducing Harmony™ by JBL. CD player, AM/FM tuner and 40 powerful watts that can fill any room with rich, full JBL audio. (Oh, and it's got dual alarms and snooze bar.) At just 12" x 10" x 8", it sounds better than stereos three times its size by re-creating music across a uniquely wide sound stage with exceptional stereo separation.

For literature/dealer locations: 1-800-336-4JBL or www.jbl.com

©1998 Harman International

JBL is one of the great brands of Harman International H HEAR US EVERYWHERE.

© 1998 PanelVebbet Incorporated Member SIPG

YOU'RE PSYCHED ABOUT THE FUTURE.

YOU'RE FULL OF NEW IDEAS.

YOU'RE LOOKING TO START A BUSINESS.

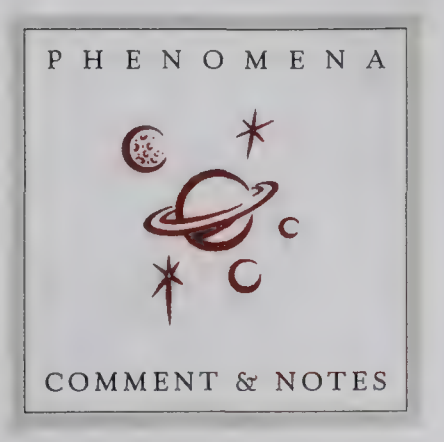
You're the one on the right.

They say retirement means the end of your working years.

We say plan well – so you can redefine retirement any time and any way you want. For many, it will be a bridge to a second career. A new business. Or a true labor of love. At PaineWebber, we know that different ways of thinking about retirement also mean different ways of helping you plan for it. A PaineWebber Investment Executive can help you find your own path through the multitude of investment choices that are out there today. With advice tailored to your individual goals and needs, as well as your own personal timeline. When you know that retirement could lead you to the best job description of all – doing what you've always wanted to do –

You'll say Thank you **PaineWebber**

To begin a relationship with a PaineWebber Investment Executive, call 1-888-PWJ-2001, Ext. 30, or visit our web site at www.painewebber.com



Coming to Terms

OUR NAMES FOR PEOPLE WHO RESPECT THE ENVIRONMENT SHOULD BE AS VARIED AS THE WAYS WE SEE IT

JOHN P. WILEY, JR.

FIFTY-FIVE YEARS AGO, WHEN I was happily tracking mice in the newly fallen snow and pasting wildlife stamps into paper albums, there was no doubt in my mind as to what I was. Clearly I was a conservationist, someone who believed the natural world was endlessly fascinating and beautiful, and that therefore as much of it as possible should be saved. You'd think people who want to conserve would be called conservatives or something of the sort, but that's not how it works. Moreover, few people I know refer to themselves as conservationists anymore. Today anyone who cares about any aspect of the "natural world" is called an environmentalist or, in Euro jargon, an enviro.

In what I understood to be its original definition, a conservationist was a reasonable person, one who understood and agreed with Gifford Pinchot, who was the first chief of the U.S. Forest Service. Yes, we would save some of nature, but we would also extract some of nature's wealth, whether it be timber, minerals, fish and game, or even salt hay. The passionate few, who wanted nature just plain saved wherever possible, guarded against any and all kinds of human interference, were known as preservationists. That has always been an extreme position, one often resented even by conservationists. (A few years before her death, I suggested to my mother—a lifelong conservationist, not to mention teacher of natural history—that a certain tract of land should be preserved to the extent of prohibiting all human intrusion. "You mean just let it rot?!" she protested.)

When the term "environmentalist" became popular, I understood it to denote people who were concerned about the physical environment, the pollution of our air and water. They could be found in small boats at night, taking samples of what a factory was dumping into a river, or in legislative hallways or courtrooms by day, where they pushed the passage, and then enforcement, of laws that would protect our health. They might never be found in the places conservationists were found, nature preserves and tidal flats, exploring stream valleys or tree lines. And they might not care very much at all about the demise of dusky seaside sparrows or California gnatcatchers.

A hard-eyed realist might argue that nothing "natural" remains in the world, so there's no use mourning what no longer is.

All of us are environmentalists, in the sense that we would just as soon have clean air and water. A lot of us are conservationists, as witness the millions who belong to one or more of the "Big 10" conservation groups: the National Wildlife Federation, the National Audubon Society, the Sierra Club and the rest. Not a few of us are out-and-out preservationists, although nowadays we go by different names. (One, unfortunately, is "tree hugger.") Metaphorically speaking, our instinct is to build fences around whatever is left. The smallest loss hurts: the sight of bulldozers tearing out the young trees and all the understory on a last vacant lot in an otherwise completely developed section of a suburb is surprisingly painful.

A hard-eyed realist might argue that nothing "natural" remains anywhere in the world, so there's no use mourning what no longer is. It's certainly true that nature "ain't what she used to be." The most remote parts of the American backcountry teem with organisms from other lands: salt cedar and Russian olive, common reed and purple loosestrife. Rivers that once ran clear are now not all that far from being slurries; some rivers no longer flow at all. When I go walking in rural Virginia, where solid hardwood forest once stood, I have to push through tree of heaven and around the multiflora rose, and carry clippers to chop futilely at the Japanese honeysuckle that is trying to strangle everything in sight. The air itself brings oxides of nitrogen and sulfur, ionizing radiation, a mist of particles too fine to see, unburned jet fuel and all manner of effluvia.

In the long, long view, however, everything is natural. Leave aside the valid argument that human beings are part of nature and therefore everything we do is natural. The changes wrought by the ice ages, coming and going, were natural. The apocalyptic changes that occurred, apparently when an asteroid hit Earth, were natural. The first appearance of photo-

My Pentax ZX-5N

My Photo

My shot of the first sunset we saw in Masai Mara, Kenya. (What a spectacular way to begin a safari.)

This is the metering mode with three options. I chose spot metering to silhouette the acacia tree and deepen the sunset.

This is the Auto Bracketing Exposure Mode that captured my Kenya sky in three distinct moods: deep saffron, fiery orange and crimson.

This is where the exposure memory lock technology is located. I used it to set the sky exposure at its most brilliant moment.

This is the ultra-compact, lightweight design with dial controls. It let me cross the Serengeti like an impala, not like a water buffalo.

Aren't your pictures worth a

PENTAX

?

Pentax Corporation
35 Inverness Drive East
Englewood, CO 80112
www.pentax.com

synthesizing organisms, which exuded oxygen, a gas poisonous to all then living creatures, was catastrophic, but it was natural. The eruption of so much carbon dioxide from Lake Nyos in Cameroon that people and animals around it died for lack of oxygen was natural, as was the bringing together by flowing water of enough of the right kind of uranium to start a nuclear chain reaction 1.75 billion years ago in what is now Gabon. If it's natural that continents break up and drift apart, surely it's natural that airplanes and ships should inadvertently carry living things from one continent to another, and hobbyists and collectors consciously move them from one to another. Does it matter that starlings and the invasive mile-a-minute vine were not here when the first Europeans arrived?

What unites river keepers, protesters in treetops, middle-aged birders, children discovering aquatic invertebrates, tropical biologists, environmental lawyers and toddlers stumbling after butterflies is not mystical worship of pristine ecosystems but a respect, even a reverence, for life. I don't mean a fanatical respect. (I remember well the times, not all that many years ago, when it seemed I was spending more for cockroach bombs than I was spending for food each week. And even though I'm goofy about dogs, I'm very happy that cardiac surgeons first learned their coronary bypass skills operating on dogs rather than people.)

The kind of respect for life I'm driving at does go beyond any potential usefulness to ourselves, however. We've all heard about the medicines expected to be discovered in as yet unknown living organisms. The potential is very real. But there's more to it than that. The natural world has been described as our life-support system, harking back to the metaphor of Earth as spaceship. Last year Robert Costanza of the University of Maryland and his coauthors tried something that a recent briefing in the British journal *Nature* said has been described as both "heroic" and "foolhardy." They tried to put a dollar value on all the services the natural world provides us: water filtering and storage, flood mitigation, pest control, soil generation, air filtering, plant pollination, oxygen production, and on and on. (Their result: $33 trillion a year, more than the combined gross national products of all the countries in the world.)

The natural world has been described as our life-support system, harking back to the metaphor of Earth as spaceship.

Mainstream economists largely dismissed the paper, according to *Nature,* on the grounds that Costanza and his group didn't properly understand what they were doing. But some thought that even if the attempt was flawed, it was still useful. Trudy Cameron, of the University of California, Los Angeles, called it "a recklessly heroic attempt to do something that's futile." She went on to say, however, that the paper has been "very useful—it has stirred things up a lot." Dollars aside, we must recognize the value to science of each and every living thing on the planet, the loss of which is like the loss of a volume from an encyclopedia.

I'm thinking more of a respect for life for its own sake, whether it be a hovering dragonfly or the intricate orange flower of the jewelweed plant. I'm thinking of the perfection of a white caterpillar crawling along the ground, or a roseate spoonbill feeding or a dolphin leaping. I'm thinking of the biologist E. O. Wilson writing, in *Biophilia,* " . . . mysterious and little known organisms live within walking distance of where you sit. Splendor awaits in minute proportions."

An invisible army of men and women have devoted their lives to studying our fellow organisms and, it is safe to say, developed a respect for them, grudging or otherwise. The umbrella term "field biologist" seems inadequate. A quick glance through the directory of the Smithsonian's National Museum of Natural History produces botanists of all sorts, as well as entomologists, mammalogists, ornithologists, herpetologists, microbiologists, ichthyologists and more. There are field biologists working in all levels of government and for any number of conservation organizations as well as profit-making companies. Most, needless to say, are not in it for the money. Some are ever so slowly creating a new discipline, called conservation biology, complete with journals and meetings devoted to exactly what the name implies.

We don't yet have a word for people who stay out of the woods altogether, so that they won't trample seedlings underfoot. (The Norwegian philosopher Arne Naess, who first coined the phrase "deep ecology," is supposed to have had such misgivings.) We don't have a word for the person who joins no organization, sends no money, attends no public meetings, but from time to time picks up knapsack and canteen and spends a day or a week soaking up the world of woods or desert or estuary.

To use the word "enviro" to label anyone who has respect for all forms of life is to embrace a poverty of language that we don't have to tolerate. My old taxonomy of preservationist, conservationist and environmentalist is just about as pauperized. What we need is a new field guide, complete with distinguishing characteristics, so we'll be able to name all the ways of looking at a very complicated world. Then at least we'll know who we're talking about.

Making a list has never been so much fun.

For over 85 years, people have turned to the L.L. Bean Christmas catalog to find the perfect holiday gift. This year you're sure to find something for everyone on your list.

Call 1-800-548-4306 to place an order today,
or shop on-line at www.llbean.com.

L.L.Bean®
FREEPORT, MAINE

Can a business tool evolve?

Every business needs the basics: pens, staplers, laser printers. But what if those needs change? For fifteen years Tektronix has been designing color printers to grow along with you. Take our uniquely versatile Phaser® 740L printer. For $1,495,* it's the black and white laser you need, with the ability to transform into the color printer you want. For photo-realistic color, simply slide in a few cartridges and the change is complete. So to see the latest in color at work, take a look at our highly evolved line of printers.

Break your office out of its shell. Call 1-800-835-6100 ext. 1548, or visit http://www.coloratwork.com

Tektronix®

*Estimated U.S. selling price; reseller price may vary. ©1998 Tektronix, Inc. Tektronix and Phaser are registered trademarks of Tektronix, Inc.

The Steam Locomotive

EVEN IN THE COMPUTER AGE, A THOUSAND-TON TRAIN DRIVEN BY FIRE AND WATER INSPIRES AWE

BY MICHAEL KERNAN

ONE BELOW-ZERO JANUARY MORNING WHEN I WAS 7, my father took me to the roundhouse at Utica, New York, a key station on the New York Central line.

What a place. It was round, all right—a vast shed mostly made of windows, nearly as cold as the outdoors—and it was full of steam locomotives, tall as houses and frighteningly noisy. Some were hissing gigantically while men in striped caps bustled about them with long-spouted oilcans. Clouds of hot steam blew up on my face.

Our engineer friend led us to a locomotive and lifted me up the iron ladder to the cab, on rungs that seemed to be two feet apart. The iron railing was cold even through my leather mittens. I had never seen such a huge machine, let alone climbed up into one.

We never did get the thing going. Some lever or other was frozen, and the man needed an exotic wrench that he couldn't find, and my father said to forget it. But I will always remember the sheer mass and contained power of that enormous engine, with its steel wheels taller than I was and its tangle of pipes and tubes and cylinders, and when I saw one chugging past or huffing in the station, it seemed like a living thing. And I knew from the movies that in an emergency, if you threw on enough coal, you could get a little extra speed out of it beyond the designer's specifications, as though that engine had a competitive spirit, as though it had a heart.

All of which is to say, I like steam trains. There's something about 'em.

In fact, there is a whole subculture of people who fill their basements with elaborate model train systems, who travel the world just to ride on some remote line three miles long, who actually buy a short-line railroad for a hobby or a small business (SMITHSONIAN, July 1998).

And then there is Bill Withuhn.

On paper, William L. Withuhn is curator of transportation for the National Museum of American History. He is also a founding member of the Transportation History Task Force of the National Research Council, and has served as a consultant to the National Park Service, which runs Steamtown in Scranton, Pennsylvania, and to Expo 2000, the World's Fair to be held in Hannover, Germany. The author of two books on trains, he is often quoted in the *Wall Street Journal*. He is a licensed locomotive engineer, too, checked out in both steam and diesel.

Engineer Bill Withuhn takes an oilcan to a 1917 locomotive used at Steamtown National Historic Site in Scranton, Pennsylvania.

"This is my third career," he tells me. "I was in the Air Force nine years, including one in Vietnam," he adds. He was in the air commandos, flying low-altitude night support for the troops.

"We'd circle a spot, and I was amazed at my own reac-

HOWEVER WELL

DRESSED YOU ARE

FOR THE WEATHER

you can still get goose bumps.

With the refined acceleration of a 290hp V8 and speed-sensitive rack-and-pinion steering, the Jaguar XJ8 can give you the most exhilarating run of the day.

JAGUAR

A new breed of Jaguar

Call 1-800-4-JAGUAR or visit www.jaguar.com/us. Remember, always wear your safety belt and secure children in the back seat. © 1998 Jaguar Cars

tion," Withuhn reflected. "You heard this American voice with an edge of panic on the radio—he's whispering, 'They're a hundred feet away'—and what can you do? How do you mark their position? Your whole being is focused on helping that person . . . "

Life is an adventure for Bill Withuhn. After Vietnam he earned an MBA at Cornell. Then he worked for a New York congressman at a time when Conrail was being created to help save Penn Central, and that was when the romance of the railroads got into his blood.

He wound up with a Smithsonian fellowship in 1980 and took a job three years later in what is now the National Museum of American History. But it is industrial history, trains especially, that fascinates him.

"Who can say why people get into this. Steam is the land version of the clipper ship," says Withuhn. "It's such a pleasure to work with your hands. And you work with blue-collar people, which is so different from the rest of my world. When you're sailing, or flying planes, you're mostly with people of means. These are working stiffs."

It's been said that railroads are the veins and arteries of America, and Withuhn knows it's true. "As a green navigator in the Air Force I was flying over the Appalachians one day, and the pilot, this old-timer, says, 'Navigator, you know where you are? I do. That's the Big Bend Tunnel down there.' Near Denver it was the Moffat Tunnel. Old pilots used rail lines like maps. The Iron Compass.

"Trains are more demanding than a plane or a big yacht," he contends. "A steam locomotive is like a rolling lit bomb. You have 200 pounds per square inch of pressure in the boiler, and if it goes up, the explosion can send the locomotive 300 yards down the track. You have this huge momentum, 1,000 tons behind you. You have to be ahead of it at all times. You need to know all the changes in grade and the curves and rail crossings."

Air brakes are a great invention, he says, but there is one problem: there is no way to let them up gradually. If you don't work it just right you will either stop before the station or go roaring past it.

"Also, you want to keep the train stretched, so the cars don't bump together. So you have to release the cars' brakes just so. In the old days they had guys on top of the cars turning their individual brake wheels."

The *John Bull* of 1831, the Smithsonian's oldest locomotive, had no brakes at all; they were only on the tender that carried the engine's fuel and water. A locomotive, the

fast reliable free*

msn Internet Access

Good things always come in 3's.

With MSN™ Internet Access,

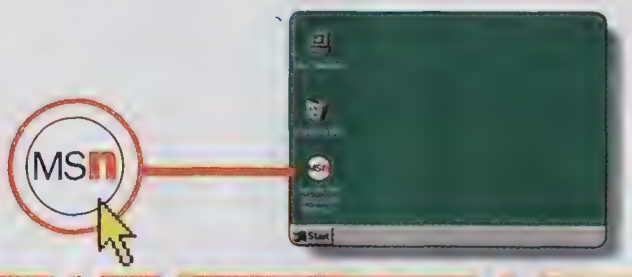
*you get the speed and reliability of the latest Microsoft® Internet technology—**try it FREE* with a full month of unlimited hours!** Then if you love it, do nothing and you'll continue getting unlimited hours of MSN Internet Access and e-mail for just $19.95/month.*

***MSN Internet Access** uses Microsoft Internet Explorer 4 software—that's the latest, fully integrated Internet software from the people who created your Windows® operating system.*

***Everything you need to get started is already on your Windows 95 or 98 desktop.** Just click the MSN icon on your desktop to start your FREE* month of unlimited hours right now. Or if your icon is missing, call 1-800-503-1400, dept. 5115, and we'll rush you a free CD with offer details—plus a free Microsoft software bonus pack. MSN Internet Access is part of the network of Internet services from Microsoft at MSN.com—THE place to get stuff done on the Web.*

*For users of the Windows 95 or higher operating system only. Includes MSN Internet Access client access software only. One month free unlimited trial is available to new members of MSN Internet Access in the 50 United States and the District of Columbia only. A credit card is required. Local phone and/or long distance toll charges may apply. Local market network activity and capacity may affect access availability. Offer expires June 30, 1999.

©1998 Microsoft Corporation and/or its suppliers. All rights reserved. Microsoft, MSN and Windows are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.



click or call

1-800-503-1400, dept. 5115

(If you don't see the MSN icon, click on Start. Scroll up the menu to Programs where you will find the MSN icon.)

Microsoft

crewmen insisted, is for going, not stopping. It didn't have a cab to keep the rain off, either. Cabs were for sissies.

"Plus, it's a team thing. You're always working with your fireman," explains Withuhn. "If you're speeding up, you have to give the fireman time to stoke the fire, or let it die down if you're slowing. When the track curves to the left, the engineer can't see ahead, so the fireman does the looking.

"Oddly enough, it's the conductor, not the engineer, who commands the train," Withuhn continues. "It started with the early railroad men in the 1830s, maritime men. They saw a train as being like a steamboat, and they wanted a deck officer. To this day, it's the conductor who sets the train in motion with his signal.

"What makes industrial history important today," he says, "is that we need to be reminded that the people who built this country physically were blue-collar workers. Running a crack train at 90 miles an hour meant you had to think three miles ahead. These were people who never finished grade school, some of them, and they had many of the same skills and responsibilities as the captain of a 747 jet. An engineer with an oilcan was big stuff once—kids looked up to him. Like airline pilots, who had a certain cachet in the '50s, but whose status has eroded now. People worked without computers then. There was civilization before the computer: we need to appreciate that."

Withuhn, 57, mourns the passing of the hands-on days of machinery. There is nothing delicate about those steel monsters, but the men who ran them developed a kind of artistry in handling them. He loves puttering about in the back shops at Steamtown, where mechanics are doing the same jobs railroad men did a century ago.

In 1981 the Smithsonian trotted out the *John Bull* and ran it down some tracks in northwest Washington.

"It was the most fun I ever had," says Withuhn. "There we were, all set to go, with all the Smithsonian brass watching, and the bunting draped over things, and the Marine Corps Band playing. Big drumroll. Everyone sat up on their folding chairs.

"And it didn't go. The throttle stuck.

"But Roger Kennedy, the head of the museum at the time, was smooth. 'Now we'll get to see the staff fix it!' he announced over the loudspeaker. So we had to take the throttle apart—it was jammed with grit—but we got the old *Bull* moving.

"Oh, it took a couple of hours. But we made it go."

IMAGINE EVERY SHADE OF BLUE UNVEILING BEFORE YOU, SPILLING ACROSS A LIMITLESS SKY. HERE, THE HORIZON IS FILLED WITH POSSIBILITY. YOU CAN SPEND ALL DAY ON SHORES OF PINK AND WHITE SAND. LOSE YOURSELF IN A FLOWER FOREST. PLAY A ROUND ON TROPICAL GREENS. HERE, THERE ARE A THOUSAND BEAUTIFUL WAYS YOUR DAY CAN UNFOLD. FOR RESERVATIONS, PLEASE CALL YOUR TRAVEL AGENT OR 1·888·BARBADOS

BARBADOS

JUST BEYOND YOUR IMAGINATION

The Beauty in the Blight

"RIDING A CITY BUS TO HIGH SCHOOL, I passed that corner every day," recalls Brooklyn-born artist Robert Cottingham. "The sign thrusts out like a grand movie marquee . . . but it's just for frankfurters." He remembers well his first exciting visits to Times Square with his longshoreman father. Ever since, he has happily roamed dilapidated downtowns, especially around bus terminals, "the grubbiest part of town . . . exactly where my subject matter is." To create *Frankfurters-Hamburgers* (above), a lithograph, Cottingham did a 6½-foot-square painting, then an acrylic study, then 26 metal plates, one for each color. "Eyeing America: Robert Cottingham Prints" is at the National Museum of American Art through January; the show, and a tour of America with the artist, can be seen at www.nmaa.si.edu/cottingham/. —*Bruce Hathaway*

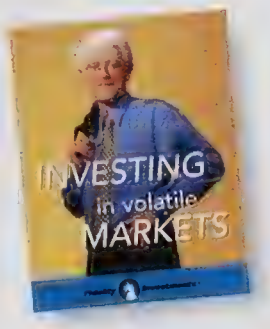
SMITHSONIAN HIGHLIGHTS

Can you handle

the stress of the market's ups and downs?

Consider this guide *"Investing In Volatile Markets"* your personal stress test.

How can you handle the anxiety that comes with a volatile market? Simple. Expect market swings and develop a personal investment strategy to help prepare for them. And, no matter what your risk tolerance, we have the solutions to help meet your needs. Call or visit fidelity.com today for your copy of Fidelity's *Investing In Volatile Markets*. It'll help you see clearly when things get, well, stressful.



Fidelity Investments®

WHERE 12 MILLION INVESTORS PUT THEIR TRUST.℠

CALL 1-800-FIDELITY

OR VISIT US AT WWW.FIDELITY.COM

Fidelity Brokerage Services, Inc., Member NYSE, SIPC. 59302.001

SMITHSONIAN HIGHLIGHTS

Frontier Photographer

The dream of Edward S. Curtis was to photograph as many Native Americans as he could, so over the course of 30 years he took 40,000 pictures representing 70 tribes from Alaska to the Great Plains. Presented by the Smithsonian Institution Libraries in its gallery at the National Museum of American History, "Frontier Photographer: Edward S. Curtis" includes a collection of his photogravures, his camera, glass-plate negatives and a display on his field-tent studio.

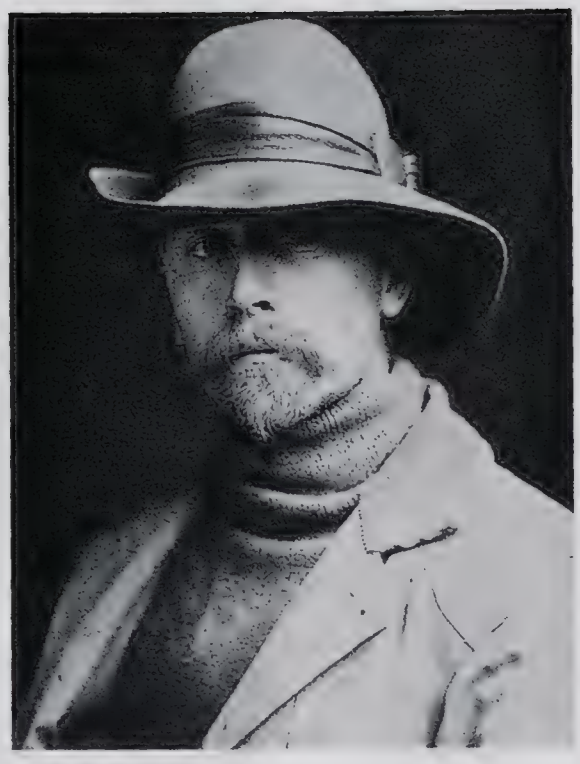
Deck the Halls

Holiday celebrations at the National Museum of American History this year include large, decorated fir trees; musical, dance and storytelling performances; and a holiday marketplace with ethnic arts, crafts and foods (December 26-28, 12-4 P.M.). On December 12, at 7:30 P.M., at the National Museum of Natural History, The Smithsonian Associates present Kol Simcha: Europe's Klezmer Band. To purchase tickets for this concert and for information on many other Smithsonian Associates programs, call 202-357-3030, or visit www.si.edu/tsa.

SMITHSONIAN Website

WWW.SMITHSONIANMAG.SI.EDU

Another place to start finding out about the many exhibitions, events, publications, programs and activities of the Smithsonian is the magazine's Website. There you will find the *Highlights Calendar* with links to the many pages of the Smithsonian Institution Website.



Edward S. Curtis, self-portrait, 1899.

Exhibitions, Events

ARTHUR M. SACKLER GALLERY

Roy Lichtenstein: Landscapes in the Chinese Style (through February 7) Paintings by the American pop artist shown with six of the Chinese works that inspired him.

FREER GALLERY OF ART

Beyond the Legacy: Anniversary Acquisitions for the Freer Gallery of Art (through March 14) One hundred gifts and purchases in honor of the gallery's 75th anniversary.

Ancient Chinese Mirrors and Belt Hooks The first Chinese bronzes collected by Charles Lang Freer.

NATIONAL MUSEUM OF AFRICAN ART

South Africa 1936-1949: Photographs by Constance Stuart Larrabee (through February 28) Seventy-nine black-and-white images capture a decisive period in South Africa's turbulent history.

NATIONAL PORTRAIT GALLERY

Philippe Halsman: A Retrospective (through February 7) Some 80 works from the portrait photographer, focusing on those published in popular magazines from the 1930s to the 1970s. *Theodore Roosevelt: Icon of the American Century* (through February 7) Paintings, photographs, political cartoons and memorabilia of the 26th President.

HIRSHHORN MUSEUM & SCULPTURE GARDEN

Chuck Close (through January 10) Large-scale faces are portrayed in more than 110 works, some photo-realist, some abstract-realist, including paintings, watercolors, drawings, prints, holograms and daguerreotypes.

NATIONAL MUSEUM OF NATURAL HISTORY

Tigers! The new diorama is presented in conjunction with the National Zoo's new *Great Cats* hill, featuring *Tiger*

Planning a Smithsonian Visit?

THE CASTLE—INFORMATION CENTER

Begin your visit at the Smithsonian Information Center's Associates' Reception Desk—open 9 A.M.-4 P.M. daily—in the Castle. Special materials and information on exhibitions, activities and dining await you there. Learn what's new at the Smithsonian and other capital attractions—videos, touch screens, maps and more.

Smithsonian museums are generally open 10 A.M.-5:30 P.M. daily, except December 25. Receive a free Associates' planning packet. Write to Smithsonian Information, Smithsonian Institution, Washington, D.C. 20560, or call 202-357-2700 (voice) or 202-357-1729 (TTY), 9 A.M.-5 P.M., Monday-Friday; 10 A.M.-4 P.M., Saturday-Sunday. Note: Parking is limited; Metrorail (subway) is convenient to all museums.

www.allstate.com
www.madd.org

©1997 Allstate Insurance Company, Northbrook, Illinois

Killer Cocktail.

Please show your commitment to safe and sober driving
by tying a MADD ribbon to your car. Get a free ribbon from your Allstate Agent,
local Mothers Against Drunk Driving chapter, or call 1-888-ALLSFTY.

Being in good hands is the only place to be.SM

Allstate®
You're in good hands.

Tracks, an interpretive trail for children. *Pomo Indian Basket Weavers: Their Baskets and the Art Market* (through January 18) Features images and examples of turn-of-the-century basketry by the Pomo Indians of Northern California.

Minnie Mouse's kitchen, Disneyland.

COOPER-HEWITT, NATIONAL DESIGN MUSEUM
[NEW YORK CITY]

The Architecture of Reassurance: Designing the Disney Theme Parks (through January 10) The influence of the "Imagineers" and cinema techniques on the architecture of shopping malls and other public spaces is examined. More than 200 artifacts including drawings, models, posters, video clips, advertisements and historical photographs.

NATIONAL AIR AND SPACE MUSEUM

And a Star to Steer By The new planetarium show, and an accompanying exhibition, *GPS: A New Constellation*, explore the history of navigation, from the ancient mariners to the latest satellite technology.
Star Wars: The Magic of Myth (through January 31) For information on limited free same-day passes, call 202-786-2122. Advance tickets can be purchased through ProTix (800-529-2440).

NATIONAL MUSEUM OF AMERICAN HISTORY

A Visual Journey: Photographs by Lisa Law 1964-1971 (through March) Documents the sweeping cultural and political changes of the 1960s.
A Collector's Vision of Puerto Rico Items from Teodoro Vidal's 3,200-object collection. Costumes, jewelry, carnival masks and more.

ARTS & INDUSTRIES BUILDING

Communion of the Spirits: African American Quilters, Preservers and Their Stories (through March 30) An exhibition of photographs explores widely varying quilting traditions used by quilters and fabric artists.
Discovery Theater Live theater for young audiences. For information, call 202-357-1500 (voice or TTY) weekdays, 8 A.M. - 4 P.M.

NATIONAL MUSEUM OF AMERICAN ART

Art of the Gold Rush (through March 7) More than 65 paintings, watercolors and drawings.
Silver and Gold: Photographs of the Gold Rush (through March 7)

RENWICK GALLERY, NMAA

Daniel Brush: Gold without Boundaries (through January 10) The first exhibition to showcase the artist's unparalleled jewels, bowls, canisters, sculptures and other precious objects.

NATIONAL POSTAL MUSEUM

Mayhem By Mail Explores three categories of crime investigated by U.S. Postal Inspectors.
As Precious as Gold The importance of letters from home during the Alaska/Klondike gold rush.
What's in the Mail for You! High-tech interactive exhibition about the direct mail industry.

ANACOSTIA MUSEUM

Eyewinkers, Tumbleturds, and Candlebugs: The Art of Elizabeth Talford Scott (through January 2) Examples of this innovative quilter's vibrant work—colorful patchworks that she adorns with bones, stones and other unexpected materials.
Classic Black (through April 30) African-American ballet dancers from the 1930s to the 1960s.

HEYE CENTER NATIONAL MUSEUM OF THE AMERICAN INDIAN [NEW YORK CITY]

The Art of Being Kuna: Layers of Meaning Among the Kuna of Panama (through March 21) Three hundred works, including jewelry, baskets, and *molas*—richly decorated blouses for which the Kuna are world-renowned.

SMITHSONIAN PRODUCTIONS

Visit the Smithsonian Productions Website for information about their radio programs and video products: www.si.edu/sp. Now being broadcast is "Remembering Slavery," a two-part documentary hosted by Tonea Stewart, and featuring recordings of first-person accounts by former slaves, and readings of their words by Debbie Allen, Louis Gossett, Jr., James Earl Jones and others. Check public radio listings in your area.

SMITHSONIAN INSTITUTION TRAVELING EXHIBITION SERVICE

Not coming to Washington? The Smithsonian may be coming to you! Each year, SITES circulates exhibitions of all shapes, sizes and subject matter to more than 250 venues throughout the United States and abroad. To sponsor a show in your community, write to: SITES, Smithsonian Institution, Washington, DC 20560. A listing of current exhibitions and additional information is available at www.si.edu/sites.

THE OBJECT AT HAND

Keepers of the Flame

AFTER BIG SALES IN WORLD WAR II AND PARTS IN OLD MOVIES, ZIPPOS ARE STILL AROUND, OFTEN AS HOT COLLECTOR'S ITEMS

BY PAULETTE DININNY

NEVER MIND THAT IT IS MAINLY USED to light cigarettes, or that smoking has been declared a sin and a shame, as well as the country's most notorious hazard to your health. The Zippo lighter is still an American icon. Windproof as always and carrying a lifetime guarantee—"it works or we fix it free"—the portable fire device is still being turned out at the rate of nearly 60,000 a day. Once there were dozens of lighter manufacturers in the United States, but Zippo is now the only American manufacturer of refillable liquid lighters left.

The Smithsonian's National Museum of American History has three Zippos, including a 1933 model with a "Patent Pending" mark, another from the years of greatest Zippo fame (1943-45) and a 1983 model. The chrome-plated 1933 lighter sold originally for $1.95. Collectors estimate that it might fetch more than $8,000 today.

On a summer's evening in 1931 at a country club in Bradford, Pennsylvania, an entrepreneur named George G. Blaisdell watched a friend awkwardly lighting a cigarette with a clunky-looking lighter. "You're all dressed up," he said, "why don't you get a lighter that looks good?" Came the terse reply, "It works." The lighter in question came from Austria, and Blaisdell—who knew that fancier and more expensive lighters often didn't work—promptly bought American distribution rights to it. He adopted the name Zippo because it sounded like "zipper"—then a newfangled and popular invention—and started manufacturing lighters in 1933.

Zippo reliability is due mainly to design. Blaisdell improved the Austrian lighter's fuel chamber. He refined the chimney by surrounding the wick with a special wind breaker, attached the lid to the brass case with a hinge, squared off the case and sized the Zippo to fit comfortably in the hand. Even so, Zippo's flame was almost snuffed out by the continuing Depression. In hopes of generating interest in his product, Blaisdell used to hand out Zippos to bus drivers at the Bradford depot. Then, in 1937, the company hired an artist who drew a shapely woman lighting her cigarette in the wind and started advertising nationally in *Esquire*.

World War II—its combat and its movies—catapulted Zippo into fame and fortune. GIs found the lighters worked under practically any amount of wind, rain or snow. Blaisdell soon got contracts from the U.S. military, as well as permission to buy scrap steel, since brass had been diverted to the war effort. During the war years, Zippo's entire production went to the armed forces. Even today, every U.S. Navy ship—from small auxiliary vessels to nuclear-powered aircraft carriers—has its own custom-designed Zippos, sold to the crew as mementos. Zippos have been part of every American war since World War II, up to and including Desert Storm.

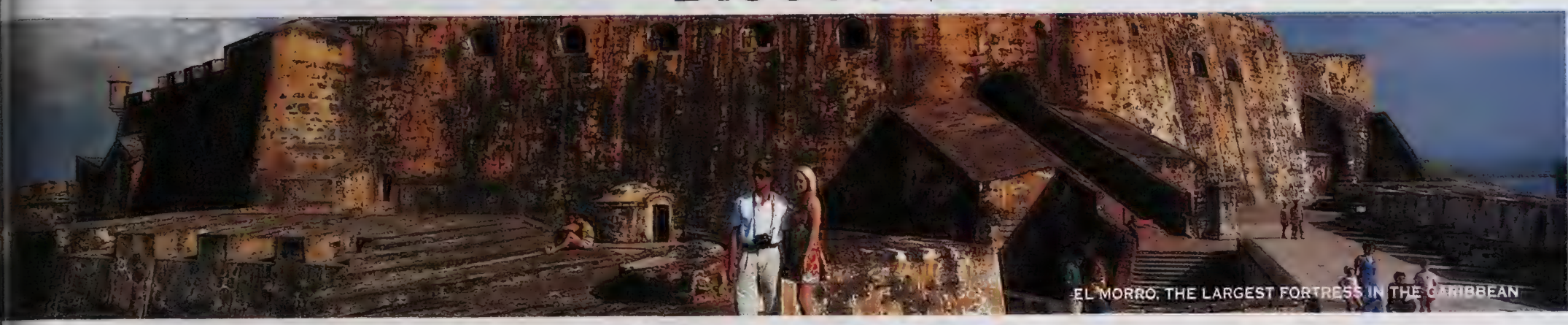
"Getting hold of a Zippo is like getting hold of a hunk of gold," war correspondent Ernie Pyle wrote to Blaisdell from the front in 1944. Every month Blaisdell shipped a boxful of lighters to Pyle to hand out to soldiers and other correspondents. "If I tried to tell you how much these Zippos are coveted at the front," Pyle wrote later, "you would probably accuse me of exaggeration. There is truly nothing the average soldier would rather have."

"It is the only lighter I've got that will light at all times, which makes your gift especially welcome," Dwight D. Eisenhower wrote to Blaisdell in November 1943. Gen. Douglas MacArthur described his Zippo as a "real work of art."

The 1933 Zippo, top, had its hinge outside the case. By WWII, bottom, the hinge was inside a smaller, rounder case.

COME

DISCOVER



THE SOUNDS

OF MY

PUERTO RICO

"And that's just the beginning. Come discover the best sounds in the Caribbean: Puerto Rico! Enjoy the sounds of our beautiful beaches, our incredible natural wonders, the most exciting nightlife and the unique sounds of our people".

Just ask your **Travel Consultant** about all the wonderful vacation experiences in Puerto Rico. **For groups and conventions, call 1-800-875-4765**

PUERTO RICO USA

ONLY PUERTO RICO PUTS IT ALL WITHIN YOUR REACH

Call today 1-800-866-7827

Linda Meabon, curator at the Zippo/Case Visitors Center in Bradford, Pennsylvania, notes that the company archives are full of letters from dozens of GIs from World War II, Korea and Vietnam, telling how they used their lighters to heat up powdered rations mixed with water in their helmets. A Zippo in a shirt or pants pocket, they said, had often saved their lives by deflecting bullets.

Zippos figured, often portentously, in flocks of war films, including: *From Here to Eternity* (Donna Reed lovingly lights Montgomery Clift's cigarette); *Bridge on the River Kwai* (William Holden bribes a Japanese guard with his Zippo); not to mention *Sands of Iwo Jima* and *Pork Chop Hill,* and a bit more recently, though frowned on by the Surgeon General, in such films as *The Right Stuff* and *Top Gun.*

During the 1950s, actor James Dean and his Zippo inflamed the imaginations of teenagers in *Rebel Without A Cause.* Up through the 1960s, Zippos were persona grata at posh restaurants as well as the famous (or infamous) gathering in Max Yasgur's field, where legions of kids were busily lighting up at the Woodstock music festival. By the 1970s, when denim became the fabric of choice, Zippo began dressing its lighters in matching denim jackets. More recently, Eric Clapton used the rhythmic Zippo clicking sound in the staccato melody he wrote for *Lethal Weapon 2.*

Zippo apologists, noting that 60 percent of the lighter's sales are now overseas, insist that only 40 percent of American owners smoke. Company promotions now soft-pedal any emphasis on what the device was designed for—lighting cigarettes. Accurately enough, they point to all sorts of benign uses, from lighting pilot lights and birthday candles without burned fingers, to starting campfires and charcoal grills. Lighters can also help determine wind direction, warm cold hands and help find lost keys (or keyholes) in the dark.

More than 30 percent of Zippo's domestic production is purchased by collectors. Memorial lighters reflect a good deal of U.S. history in the latter half of the 20th century. The Mercury and Apollo space missions were commemorated, and a Moon Landing Zippo was released in 1969 to mark that event. Professional sports organizations such as the National Football League are represented. There is a series created for Ford, Chevy, Jeep, as well as (good grief!) Camel and Lucky Strike cigarettes. Even the ill-fated USS *Pueblo,* which was taken prisoner with all her crew by the North Koreans in 1968, has its own distinctive commemorative lighter. Zippos bearing logos and emblems of companies, such as Texaco, Grumman, John Deere and Mack, and especially companies that have gone out of business, such as Studebaker and Old Gold Cigarettes, are highly prized collectibles. Sample costs: from $50 to $250.

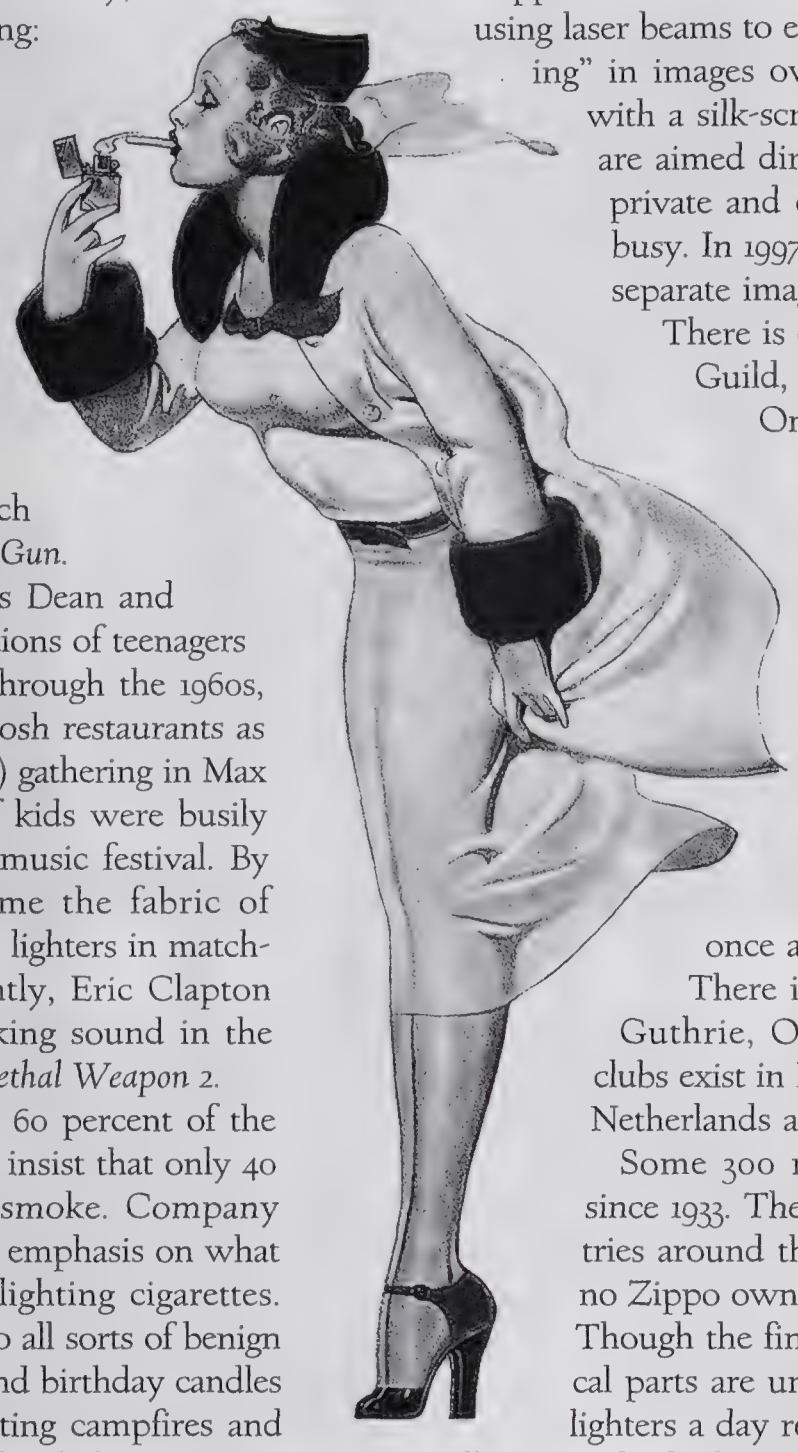
Zippo's artists still create special "pocket art," sometimes using laser beams to engrave the metal, sometimes "etching" in images overlaid with epoxy, or imprinting with a silk-screening process. "Limited editions" are aimed directly at collectors, but it is mostly private and corporate clients who keep Zippo busy. In 1997, the company used nine thousand separate images on its lighters.

There even a Pocket Lighter Preservation Guild, as well as a collector's group called On the LIGHTER Side. Larry Marshall, founder of the PLPG, admits that collectors are often "history nuts." They mainly want antique advertising logos or lighters that reflect some aspect of contemporary pop culture such as rock 'n' roll. Peggy Sheils, a celebrated collector, has a room piled high with boxes filled with Zippos, Marshall says, and visits it at least once a day as if it were a "shrine."

There is the National Lighter Museum in Guthrie, Oklahoma, and lighter collectors' clubs exist in England, Germany, Italy, Japan, the Netherlands and Switzerland.

Some 300 million Zippos have been made since 1933. They are sold in more than 100 countries around the world, and the company claims no Zippo owner has ever spent a cent on repairs. Though the finish is not guaranteed, all mechanical parts are under warranty for life. About 1,000 lighters a day reach the Zippo Repair Clinic, usually in need of a hinge. Some customers send money for postage or to absorb some of the repair costs, but the money is always returned with the repaired lighter.

When George Blaisdell died in 1978, he already had a whiff of the changing sentiment about tobacco smoking. Today, although the click of trophy Zippo cases can still be heard in the land, the use of the flint wheel for actually lighting up is fading fast.



This image of a curvaceous blonde lighting up in a high wind ran as an ad in *Esquire* to boost sagging sales during the Depression.

DO YOU CELEBRATE CREATIVITY?

LIFESTYLE®
HOME THEATER
SYSTEMS

Creativity comes from a willingness to be different and the technology to make it work. Lifestyle® systems represent a fundamentally different approach to audio, engineered to be the best sounding, easiest to use home theater systems ever. One listen and you'll understand why *Stereo Review* said we had "A decidedly different world view."*

BOSE®
Better sound through research®

1.800.444.BOSE
Please Ask For Ext. 682

For information on all our products:
www.bose.com/lifestyle

©1998 Bose Corporation JN98228G *Stereo Review, February 1998

Our unique All-Wheel Driving System automatically transfers power from the wheels that slip to the wheels that grip.

Our engineers have given every Subaru a mind of its own. It's called the All-Wheel Driving System. A combination of three unique components, all working together to react to your every move. The horizontally opposed boxer engine provides a low center of gravity

The ABC's of Safety: Air bags. Buckle up. Children in back. Legacy® GT Wagon shown with optional equipment.

for better control. The four-wheel fully independent suspension helps smooth out even the roughest of roads. And the full-time All-Wheel Driving System automatically transfers power from the wheels that slip to the wheels that grip for maximum traction and handling in almost any type of weather. So to get a vehicle that's always thinking, drop by your Subaru dealer for a test-drive, visit www.subaru.com or call 1-800-WANT-AWD. We'll be anxious to see your reaction.

SUBARU

The Beauty of All-Wheel Drive.®

Let It Snow

SKI RESORTS HAVE SNOWMAKING DOWN TO A SCIENCE—
NOW SOMETIMES THE REAL STUFF GETS IN THE WAY

BY CARL HOFFMAN

IT'S THREE WEEKS BEFORE Christmas, and radio stations from Portland to Boston are blasting Ryan Triffitt's manic pitch. "The snow is deep, and the riding and skiing are sweet," declares the marketing flack for Maine's Sunday River ski area. "We're opening Lollapalooza and Excalibur. And this weekend looks incredible, with the grand opening of our new lift, the Perfect Turn Express." Officially, it's not even winter yet, but Sunday River is hoping 8,000 skiers will show up.

Which is why the men responsible for Sunday River's snow aren't looking too happy right now. It's Thursday afternoon. We're sitting around a table in Chip Seamans' office. Bill Brown, a former ski racer and ski-academy headmaster with a master's degree in economics and the unlikely title of director of snow production, is fresh off the mountain. Hair mussed, cheeks red and feet bare, he has some bad news. A soft blanket of virgin powder was supposed to grace Lollapalooza and Excalibur by now, but, Brown reports, the two trails are unskiable obstacle courses of sharp rocks, slush and the occasional frozen lump that skiers call a death cookie. And the snow cover around the Perfect Turn Express lift is little more than tufts of hay sticking though slush. Someone forgot to check this out late yesterday afternoon, but the folks over at marketing went ahead and touted the "grand opening" anyway. And making false promises about conditions can ruin a ski area's reputation. Even worse, it's almost 40 degrees Fahrenheit outside. A steady stream of water drips ominously from the roof past the office window.

"We screwed up," says Seamans, Sunday River's vice president for mountain operations. "We've got a lot of advertising out there and we need to get these runs going." It's snowmaking time. Time to bring out Sunday River's 1,300 snow guns and fourteen $180,000 snow groomers; time to turn on the compressors and

PHOTOGRAPHS BY LAYNE KENNEDY

pumps that drive 65,000 cubic feet of air and 9,000 gallons of water a minute through 72 miles of steel pipe; time to scratch heads and crunch numbers. You've got temperature, humidity, wet bulb (temperature adjusted for humidity), dew point, wind speed and wind direction, and number of skiers forecast. How nice can you have your made-to-order snow? That depends on how much you're willing to spend. Good snow requires lots of electricity, and if you gobble up 26 million kilowatt-hours a year, and Sunday River does, one hour can cost $1,700. "Making snow is like baking a huge cake when the recipe is always changing," says Scott Barthold, a Dartmouth engineering-school graduate and former ski racer whose company, Sno.matic Controls and Engineering, is trying to build a better snowmaking machine. "There's timing, strategy, judgment and meteorology, and then when you get it down you've still got to spread it out." You can do it right away or let it cure. You can blade it, till it, roll it and still screw up: unevenly spread piles of snow, rock-hard ice or too many death cookies.

Snowmaking is an art and a science, and without it skiing as we know it would be dead. "That is unquestionable," says Preston Smith, the founder of Vermont's Killington ski resort and a pioneer in the world of snowmaking. "You can't spend $15 million on a new high-speed gondola and then just hope for snow." From North Carolina to northern Vermont, from the Colorado Rockies to California's High Sierra, from Japan to Argentina and even that paragon of Alpine wonder, Switzerland, ski resorts are relying more and more on making and grooming snow—farming it, in effect—to attract skiers. "Technology has guaranteed an

Creating an artificial blizzard, "guns" spew snow at Sunday River, near Bethel, Maine.

expectation of good skiing and good snow," says Scott Barthold. "And if a ski area doesn't have it, skiers will go to one that does."

Snow farming has changed everything about the ski industry, from the design and layout of trails, to the placement of lifts, to the timing and length of the season itself. It has riled environmentalists and birthed an infant high-tech industry of companies like Sno.matic. Weirdest of all, it has reduced Mother Nature's contribution to a near nuisance. "I used to pray for snow," says Burt Mills, until recently the head of mountain operations for Sunday River's parent organization, the American Skiing Company, which owns a total of nine ski areas in the East and West. "But now if it comes on a weekend, it's a

A machine used to till and groom slopes at Sunday River fills in a hollow spot. Tilling, done by an attachment on back, breaks up hard snow; grooming distributes it evenly.

At work one night, technicians demonstrate the old coat-sleeve test for gauging snow.

curse. People can't get to the resorts."

Still, Mother Nature isn't about to give up without a fight. As Seamans and Brown ponder this morning's snowmaking possibilities, the latest custom weather update rolls off the fax machine from a private forecaster in New Hampshire. The news isn't good. "Temps," as snowmakers call temperatures low enough to make snow, will be marginal, even at night, with high humidity. No matter. "As soon as we get temps let's hit 'em," says Seamans. "I want the guns set up right now, and we'll have the system charged and the guys in the pump house ready."

Three and a half centuries ago, Ben Jonson gushed, "Have you mark'd but the fall o' the snow / Before the soil hath smutch'd it? . . . / O so white! O so soft! O so sweet . . . !" For all its marvels, however, it's hard to imagine anyone waxing poetic about the stuff Bill Brown and Chip Seamans make. It's made in an explosive, earsplitting shriek that is anything but soft or sweet. The process seems simple enough. Atomize a stream of water with compressed air and send it hurtling into cold air, and the droplets of water freeze and fall to ground as tiny pellets of ice. Snow, of a sort, is born. Engineers Art Hunt, Dave Richey and Wayne Pierce did it for the first time on March 14, 1950, with a garden hose, a ten-horsepower compressor and a spray-gun nozzle behind their nascent ski factory in Milford, Connecticut. Overnight they produced a 20-foot-wide pile of snow 20 inches deep. The feat garnered them a patent (from which they barely earned a dime) and attracted a lot of attention from radio and newspaper reporters. But try it on a large scale, and you immediately run into a series of vexing conundrums:

How to keep huge amounts of water liquid through miles of narrow pipes in subfreezing temperatures.

How to supply amounts of cold, pressurized air to the snow gun, when compression makes the air hot and full of moisture, which then condenses and freezes as the air cools as it travels through the lines.

How to make a droplet of the

water that you've heroically kept from freezing suddenly freeze before it hits the ground in temperatures that are barely subfreezing.

And ultimately, how to manufacture tens of millions of snowflakes exactly the same way day after day under completely different conditions.

Replacing the magic of the clouds with an air compressor and river water is, in fact, a mind-boggling process. It has taken the best efforts of two generations of American tinkerers, visionaries and engineers to figure it out. "God almighty," says Burt Mills, a man with nine fingers (he lost the tenth in an industrial accident) who taught himself how to weld pipe in Sunday River's parking lot and dreams of what he calls the Disney snowstorm. "We used to beat ourselves to death. In the old days, making snow was a pitched battle against the elements, and I felt like I'd gone to war."

To learn the ins and outs of snowmaking, I've come upon the mountain with a fellow named John who is 19 and sports a ragged goatee and an earring. It's 5 o'clock on Friday evening. We're standing in lightly falling snow and pitch blackness at the top of Excalibur, draped head to toe in waterproof Gore-Tex and wearing mountaineering boots. The only light is provided by the cozy, narrow beam of our helmet-mounted headlamps. It's been 30 hours since Chip Seamans ordered the snowmaking system charged and ready to go, and temps have finally arrived. We've got exactly 14 hours left until the Saturday crowds roll in, pumped to ski on Excalibur. John and I are already soaking wet, having stumbled into deep, snow-filled holes up to our crotches and clambered over snow-covered boulders in pursuit of two pipes at the edge of the trail.

As tough as it is, it's better than it used to be. Back in the dark ages (about 25 years ago), when Burt Mills was staggering around on the mountain, there were no Gore-Tex clothes, the pipes came from the local hardware store and everything was ad hoc. "It would be zero with the wind howling, and we'd be out there in our blue jeans and old wool stuff," remembers Mills. The hoses and pipes froze constantly, and Mills tried everything from injecting the system with hundreds of gallons of alcohol to burning gasoline-soaked paper towels wrapped around frozen pipes and hydrants. Killington's Pres Smith preferred burning tires and the occasional road flare. "We thought they knew what they were doing," Smith says of the agricultural-irrigation firm that laid his first snowmaking line in 1963. The minute the water started flowing on Killington's first line, the pipes began to freeze; a few hours later the system was frozen solid. It wasn't long before the pipes burst, sending a geyser 150 feet into the air.

Rooting around in the snow, John and I yank two 50-foot-long frozen nylon hoses out of the crust, and drag the snow gun onto the ski trail. Back

A snowmaker adjusts hydrant settings as specified by a computer system. One pipe carries compressed air; the other carries water. The hoses are hooked up to a snow gun.

at the hydrant, John connects the hoses and cranks the water on. There's a whoosh, and a plume of icy water sprays out of the gun 15 feet into the sky. Then he turns the crank on the air hose and suddenly the peaceful night is shattered by a deafening roar. The spray of water is now snow, or at least something like it. Exactly what, however, is another matter altogether.

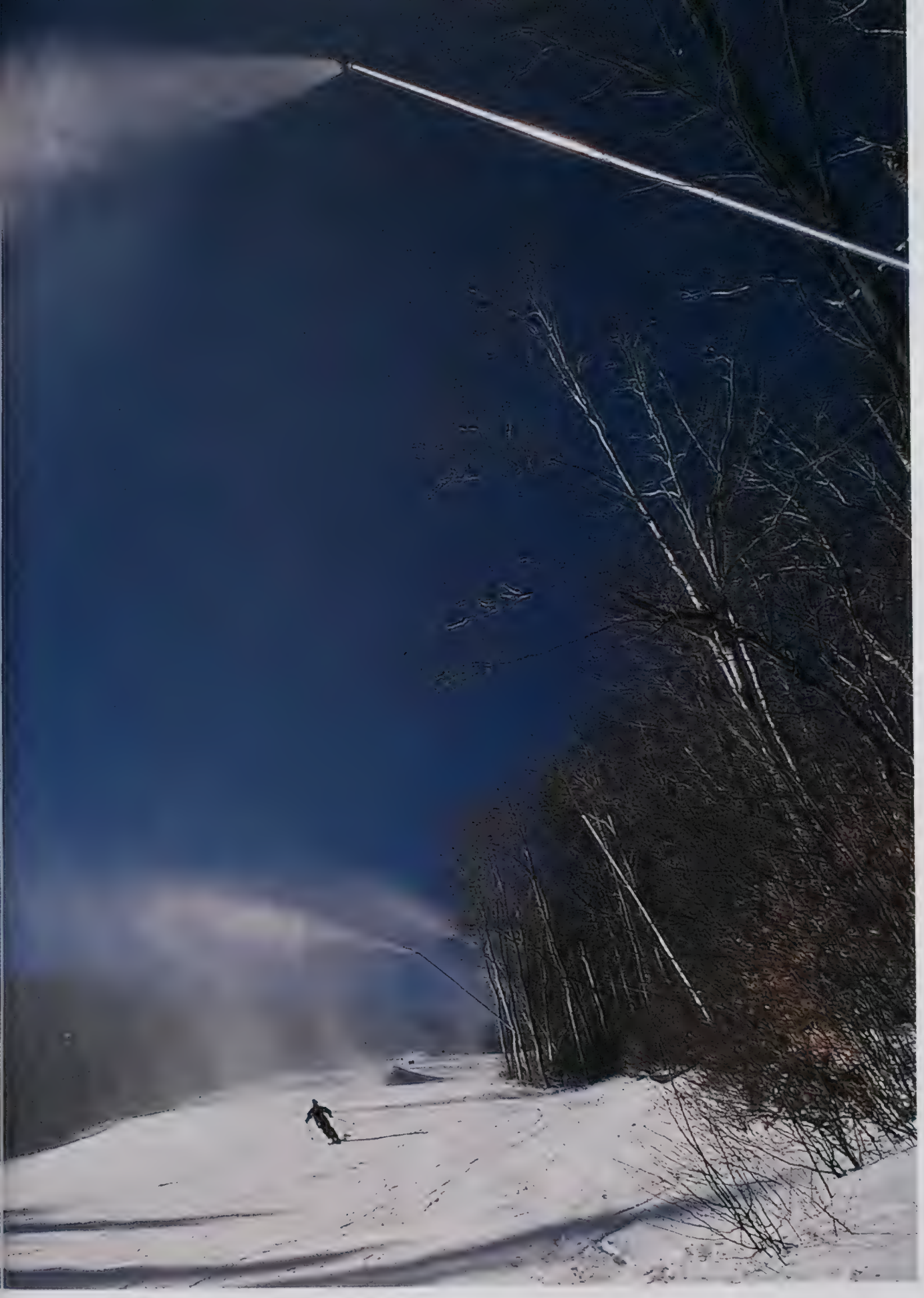
"To make snow is simple," says Yaroslav Stanchak, who is vice president of engineering at the American Skiing Company and in the past has worked for both Killington and Sunday River, "but to consistently make good snow that is also consistent from the top of the mountain to the bottom, that's damn hard."

Theoretically, water freezes at 32 degrees Fahrenheit, but in the real world the temperature at which crystallization occurs varies. When the relative humidity is high, water may not freeze even at subfreezing temperatures. When the air is extremely dry, on the other hand, water can freeze quickly at temperatures higher than 32 degrees. This is why snowmakers focus not on the outside temperature alone, known as the dry bulb, but on the temperature mathematically adjusted for humidity, or wet bulb. At 29 degrees dry bulb and 95 percent humidity, the wet bulb will be too high to make snow effectively; at 37 degrees dry bulb and 10 percent humidity, the snow guns can do their work.

It doesn't end there, however. High in the heavens, water vapor crystallizes around minute specks of dust or ice and silently falls earthward. As it wafts on updrafts and downdrafts that may loft it for miles, it may grow into an elegant, hexagonal-shaped flake or needle. A droplet of water shooting out of a snow gun, however, has only seconds to crystallize before it hits the ground. It lacks what snowmakers call hang time. In extremely cold and dry conditions, that's no problem; the droplets freeze almost instantly, and little compressed air is needed. But marginal temperatures and high humidity require huge amounts of highly pressurized air, and sometimes an artificial nucleator—something snowmakers put into the water for vapor to crystallize around. Too much water and you've got wet sludge; too much air and the snow is so light it just blows away. Even trickier is getting the right air-to-water ratio at every gun on the mountain; because of differing elevations and microclimates, there is a different wet bulb at each.

Snowmakers like John traditionally relied on a deeply scientific method of calculating the quality of their snow, the coat-sleeve test. If snow stuck to your sleeve, it was too wet. "We were looking for the right

A lone skier passes under a plume of snow from a tower gun on a Sunday River slope. The bump higher up was made for skiers and snowboarders who want to "catch some air."



bounce," says Burt Mills. "It wasn't very precise." And the snow they made reflected that test. It was heavy and wet, and seen as little more than an insurance policy. Snowmakers often made it in big piles and drifts, spread it out with plows, and packed it down as hard as they could with rollers. That created a tough, rock-hard white base impervious to sudden, midwinter thaws, and it revolutionized the ski industry. With snowmaking, a New England resort could open by the end of October and close in April or May, guaranteed. "We went from nothing to competing with the West in 15 years," says Pres Smith. "It was unbelievable." And it didn't really matter if the skiing was good or not. "Perception is 90 percent of the game," says Les Otten. "Just having snow builds consumer confidence."

In 1973, and a year out of college, Otten was hired as an assistant manager at Sunday River, which was then owned by giant Killington. The resort had snowmaking only on half of one trail. In 1974, the year Mills arrived, Otten decided to install snowmaking on the whole trail. They noticed something profound. "People started telling us it was their favorite run," Mills recalls. By the early '80s Mills had begun to dream of the Disney snowstorm. Why not try to make really good snow, snow that was not just a heavy, wet base, but snow that was light and powdery and practically as good as the stuff made by Mother Nature herself, and coat every trail every night with four inches of it? It would give skiers at the start of each new day the same quality of skiing as they had had the day before. "We were naive enough to think we could do it better than anyone else," says Mills. They built a bigger compressor system than any other ski resort, developed an efficient snow gun that resisted freezing up, divided the mountain into temperature zones and created a system for snowmakers to set the air-water mixture according to the wet bulb, and eliminate the coat-sleeve test. They stopped spreading newly made snow with the groomers and, indeed, stopped touching it at all until it had cured for 24 hours, leaving the little blobs of ice completely frozen.

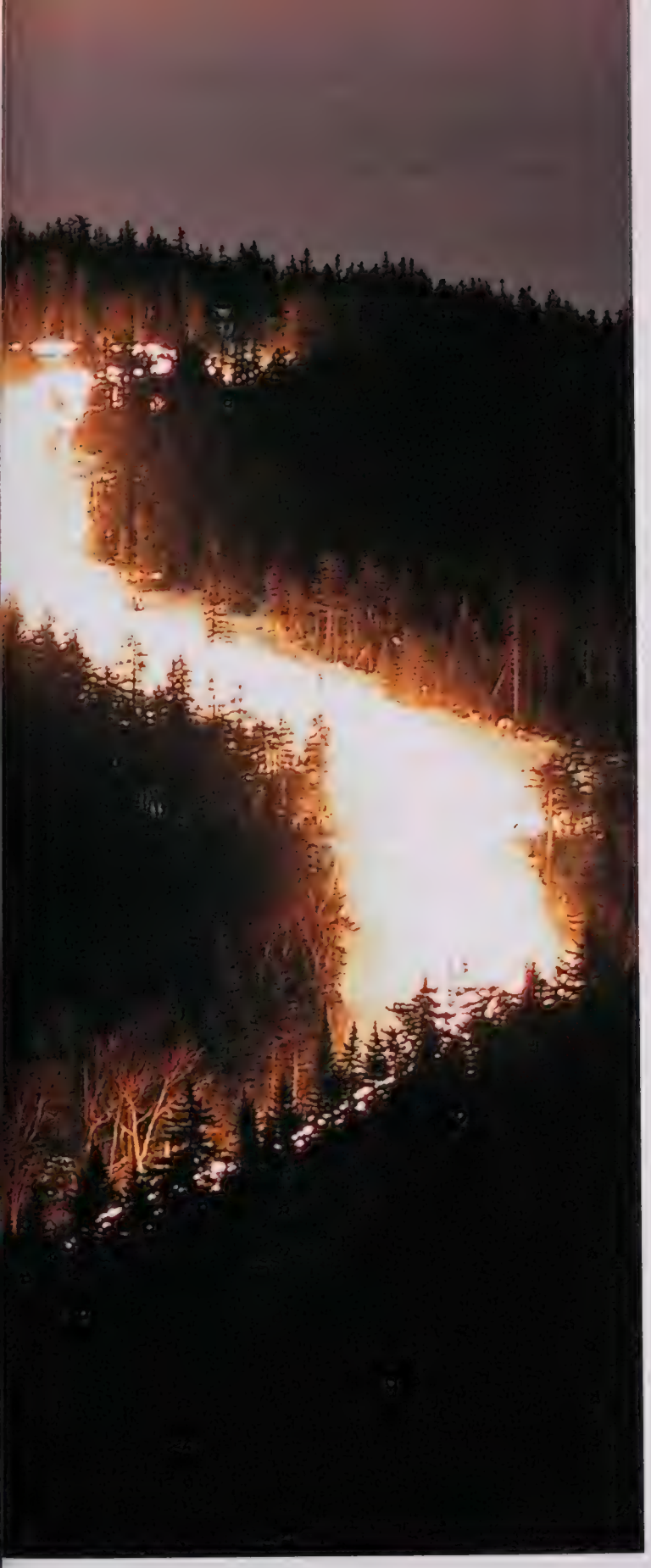
Dinky Sunday River exploded. In 1980 Otten bought Sunday River from Killington; in 1996 he bought Killington. Today his American Skiing Company is the largest ski company in the United States. "Snowmaking has been the single most important component in our success," Otten says. So profound is his belief in snowmaking that, having just purchased a resort in Utah, home of what is arguably the world's best natural snow, he's installing a top-to-bottom snowmaking system there.

Ski areas around the world have

In a time exposure, slopes glow from the lights of a fleet of groomers perking up Sunday River's 48 miles of runs. The machines will log almost 800 miles by morning.

followed suit. Snow-blessed resorts in the Rockies, the Sierra Nevada and even the Alps are blasting their slopes early in the season with machine-made snow, ensuring consistency and consumer confidence. Trails, which in the East used to be narrow to help retain snow, are now being designed wider and steeper and sometimes even on south-facing slopes in the sunshine. "You could never have super-steep trails like the ones on Bear Mountain at Killington with an average gradient of 65 percent if it weren't for snowmaking," says Smith. "The wind erosion would be too great. If you took a group of skiers from the 1950s and put them on the mountain today, they wouldn't believe it. Then the best days were few and far between, and now the best days are damn near every day."

What is abundantly clear to me, up on the mountain with John in the darkness, is that the battle is far from over. In the driest weather, Sunday River can supply enough pressurized air to power only about 220 of its 1,300 guns at once, and in wet weather like tonight's, when more pressure is needed to make more snow, it can only do about half that many. And pipes, even on relatively warm nights like this, still freeze. At one hydrant, John has to have a blowtorch brought up on a snowmobile to thaw it out. Still, the guns crank throughout the night as temps continue to fall, and by 8 o'clock Saturday morning Excalibur is covered by a smooth layer of virgin snow. No death cookies, no rocks, no slush. Cars from Boston



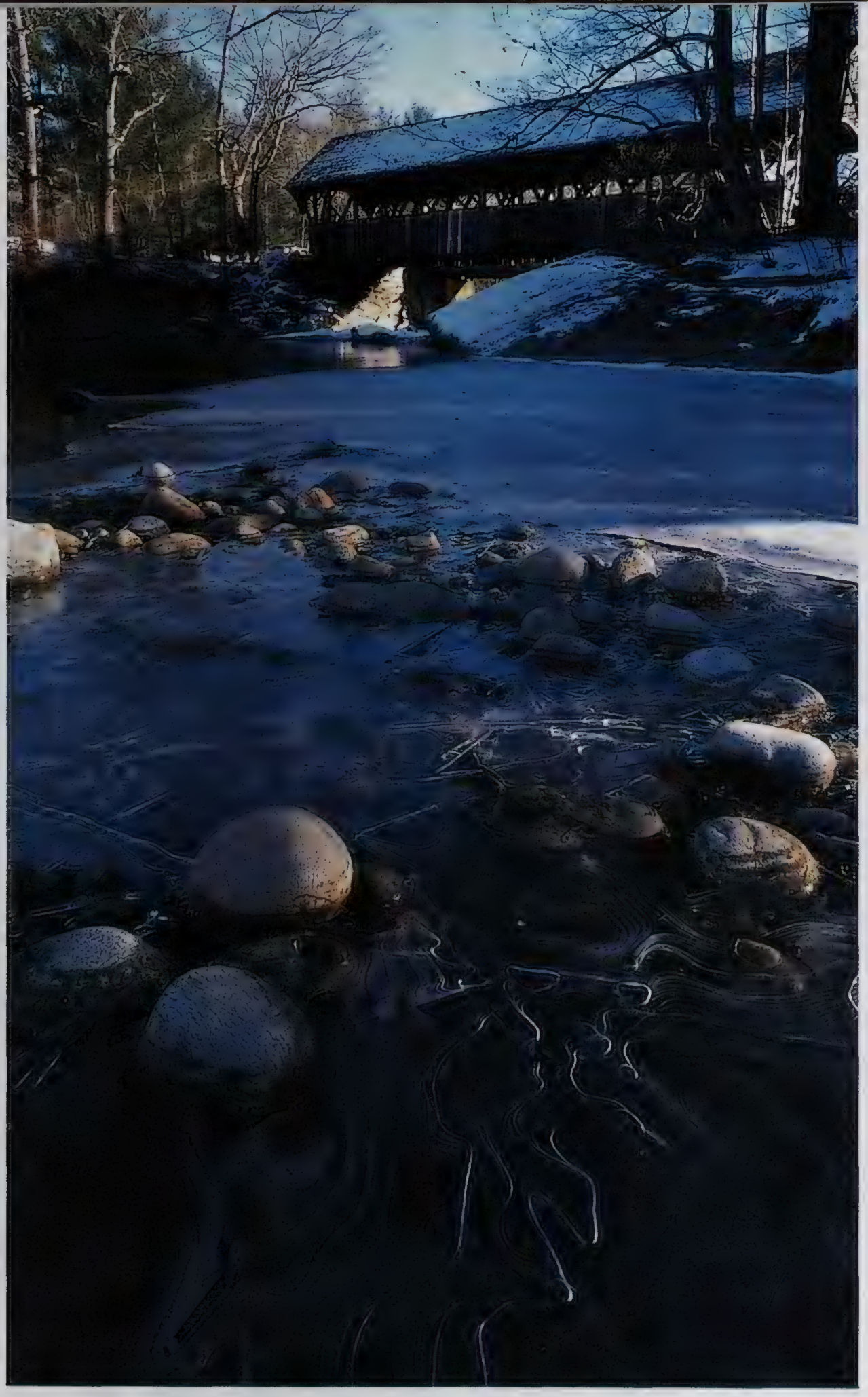
and Portland and everywhere in between are flowing into the parking lots, having answered Ryan Triffitt's call. And Bill Brown and Chip Seamans are smiling at last.

Where skiers see snow, some environmentalists see trouble, especially in Vermont. The diesel generators that power Killington's snow machines, for instance, are the eighth-largest air polluters in the state. Sugarbush uses as much as 25 percent of the energy consumed in the entire Mad River Valley. And the millions of gallons of water that shoot through the pipes have to come from somewhere, and that somewhere is often the headwaters of the mountain streams and rivers that, in February, are at their lowest flow levels of the winter. "Aquatic organisms need water to survive," says Jeffrey Cueto, principal hydrologist with the Vermont Agency of Natural Resources, "and some streams in Vermont were threatened by snowmaking." Or, as Christopher Killian, water-program director of the Vermont Natural Resources Council, puts it: "They were virtually devastated. These are class-A streams over 2,500 feet high and sometimes over 30 feet wide. Bugs, fish, frogs—they're particularly susceptible in the harsh winter, and some of the withdrawals were drying out half-mile sections of our most pristine and fragile waterways."

The battles began in the late 1980s and reached a head in the early '90s, when the Vermont NRC filed suit against one of the state's largest ski areas. In 1996 a truce of sorts was reached, when Vermont promulgated what it calls a February median-flow standard. Ski areas agreed to create large holding ponds—Sugarbush's is 63 million gallons, for instance—that would provide them with water when the streams' water flow fell below the February median-flow rate. The truce is holding, for now at least, although Killian points out that certain issues remain unsettled, including air pollution, erosion from the spring melting of millions of gallons of water in the form of machine-made snow, and degradation of aquatic habitat. "In general, though, the snowmaking rules are working," says Killian. "Vermont has seen major environmental gains as a result of the compromise."

Until the early '90s the science of snowmaking was largely a process of trial and error developed on the mountains by inventive, self-taught experimenters like Burt Mills and Pres Smith. But the ultimate challenge of perfecting the manufactured snowflake is now falling to a new breed, including people like Scott Barthold. The president of Sno.matic Controls and Engineering, Inc., always places "PE" (for "professional engineer") after his name on official correspondence. During our first telephone conversation, when I asked Barthold where he lived, he answered, "Seat 15A, United Airlines," and so I pictured him as a nerdy corporate engineer in a starched white shirt who probably spent a lot of time flying back and forth between meetings. But there he was, a tall, freckle-faced, shaggy guy who showed up for our meeting at Vermont's Sugarbush

Early in the season, skiers and boarders enjoy the sun at Sugarbush in Vermont, where a 63-million-gallon holding pond provides water for artificial snow.



A covered bridge spans the Sunday River, a source of water for snowmaking at the nearby ski resort. Drains are set high enough that the river is never dried out for snow.

resort with a pair of very fast skis.

Barthold wanted to show me Sno.matic's latest invention, a triumph of engineering, physics and computer programming that sits at the top of the mountain. On the chairlift up, he was eager to explain the difficulties in sensing the many characteristics of snow, and how in all the world there were but a handful of people with technical knowledge trying to figure them out. Then there we were, standing before a little brown box connected to a series of pipes and hoses.

He said something into his walkie-talkie, the pipes hissed, and suddenly, with that shrieking roar, snow was falling on our heads. There was no hauling of snow guns or frozen lines, no laborious turning of cranks, no water or air flow to measure.

This, it was clear, was the future of snowmaking, the Disney snowstorm come to life. At Barthold's command, a guy in the pump house at the bottom of the mountain had selected a specific quality of snow, slid his mouse to the dot on his computer screen representing this particular snow gun, and clicked. Sensors in the little brown box had assayed the air's temperature and humidity, and calculated the wet bulb and the correct air-water ratio, and presto, out shot the made-to-order snow from a tower high above our heads.

Over the next couple of hours, in quick lectures sandwiched between high-speed sorties down the mountain that nearly killed me, Barthold explained the difficulties of imitating Mother Nature with the click of a button. Although his automatic hydrants were blizzarding slopes all over North America and Asia, Barthold hadn't completely conquered the ever-elusive snowflake. You could set all the parameters of his guns and hydrants, he said, but you couldn't guarantee that what came out would be exactly what you wanted. Sugarbush still has to have a real, live person spot-check each and every gun to "feel the snow," as Barthold put it. "But once we have finally learned how to measure and sense all of snow's characteristics," he went on, "then we will be able to close the loop and make snow automatically."

We were at the top of the mountain again. Barthold pointed at the miles of white trails below us. "Let's ski!" he exclaimed.

Carl Hoffman is a believer in the adage that once you have learned to ski in the East, you can ski anywhere. Layne Kennedy's images of a radio-tower crew ran in the July 1997 issue.

OFFICIALLY,

IT'S CALLED

JACK DANIEL'S
OLD TIME
OLD NO. 7 BRAND
QUALITY
TENNESSEE
SOUR MASH
WHISKEY.

BUT YOU CAN ASK FOR JACK.

Your friends at Jack Daniel's remind you to drink responsibly.

Tennessee Whiskey • 40-43% alcohol by volume (80-86 proof) • Distilled and bottled by Jack Daniel Distillery, Lem Motlow, Proprietor, Route 1, Lynchburg (Pop. 361), Tennessee 37352
Placed in the National Register of Historic Places • Visit us at http://www.jackdaniels.com

Dazzling color wood-block prints such as Toshusai Sharaku's 1794 portrait of actor Otani Oniji III (above) and Utagawa Kuniyoshi's rendering of Miyamoto Musashi subduing a whale were innovations of the Edo era.

BY KENNETH BAKER

the AGE of EDO

A NEW EXHIBITION ILLUMINATES ONE OF THE RICHEST ERAS IN THE HISTORY OF JAPANESE ART

WE LIVE IN A CULTURE thick with signs and messages, but we are free to decide which messages speak to us, which to ignore, which to contradict. How would we feel if all the everyday messages we got—the design and materials of the clothes we wore and objects we used, even the foods we ate—reaffirmed the rigid facts of a social order in which our place was fixed? That was the dream of the

military rulers who unified Japan for the first time, early in the 17th century.

But the stability these rulers imposed had consequences that were very different from what they envisioned—consequences that started to turn Japan from a feudal realm into a modern society. The magnificent exhibition "Edo: Art in Japan 1615-1868" at the National Gallery of Art (through February 15, 1999) uses artworks to make that transformation vivid.

With paintings, sculptures and screens, textiles, weapons and fine porcelains, the show traces the era when Edo—known to us as Tokyo—first became Japan's seat of power, and demonstrates how traditional symbols and new design ideas collided across the whole spectrum of material culture.

Scroll paintings contrast the staid landscape images made by scholars with the dashing eccentricity of pictures by samurai and Zen monk amateurs. Gilded screens detail the daily activities of working people and give us panoramic views of urban life and seasonal festivals—cross sections of society unprecedented in Japanese art. Robes and costumes are almost overwhelmed by the boldness of their designs,

writhing with appliquéd dragons or rocking with waves; one remarkable costume (p. 64) has a target embroidered on its back with an arrow piercing the bull's-eye. Wood-block prints—the Pop Art of their day—celebrate the spectacle of Kabuki and other plebeian pleasures of Japan's suddenly citified Edo-period culture.

The world evoked in "Edo" is remote from ours in language, history, institutions and beliefs. Yet through the art assembled here we can recognize in that world early stirrings of modern life: different strata of society mixing as never before; newly centralized political power; business gaining in prestige and social impact; the reorientation of the whole society toward its cities; and good design filtering into every level of material culture, not just the elite.

Until the early 17th century the islands of Japan were divided into numerous provinces controlled by contending regional warlords, known as daimyo, and their private armies. In the early 1600s, after years of epochal warfare, Tokugawa Ieyasu emerged as Japan's supreme military leader and assumed the title of shogun. The Tokugawa clan would remain in power for more than two centuries; in fact, the Edo period is sometimes called the Tokugawa era. Ieyasu made the garrison town of Edo his capital. The elaborate sumptuary laws he instituted were part of an effective scheme to keep former military men busy with self-cultivation, civilian ritual and costly displays of obedience. These included the edict that all daimyo and their samurai retainers spend alternate years in Edo and in their own local fiefdoms. The frequent processions of daimyo estates to and from the city made the display of available power—manifest in numbers and accouterments—into civic spectacle. The elaborate armor and helmets on view in the "Edo"

P. 60 TOKYO NATIONAL MUSEUM; PP. 60,61 PRIVATE COLLECTION

A mysterious, somewhat melancholy quality pervades the six-panel, gold-leaf *Hikone Screen* (c. 1620s-40s), a Japanese National Treasure and one of the highlights of the show.

PP. 62,63 HIKONE CASTLE MUSEUM, SHIGA PREFECTURE

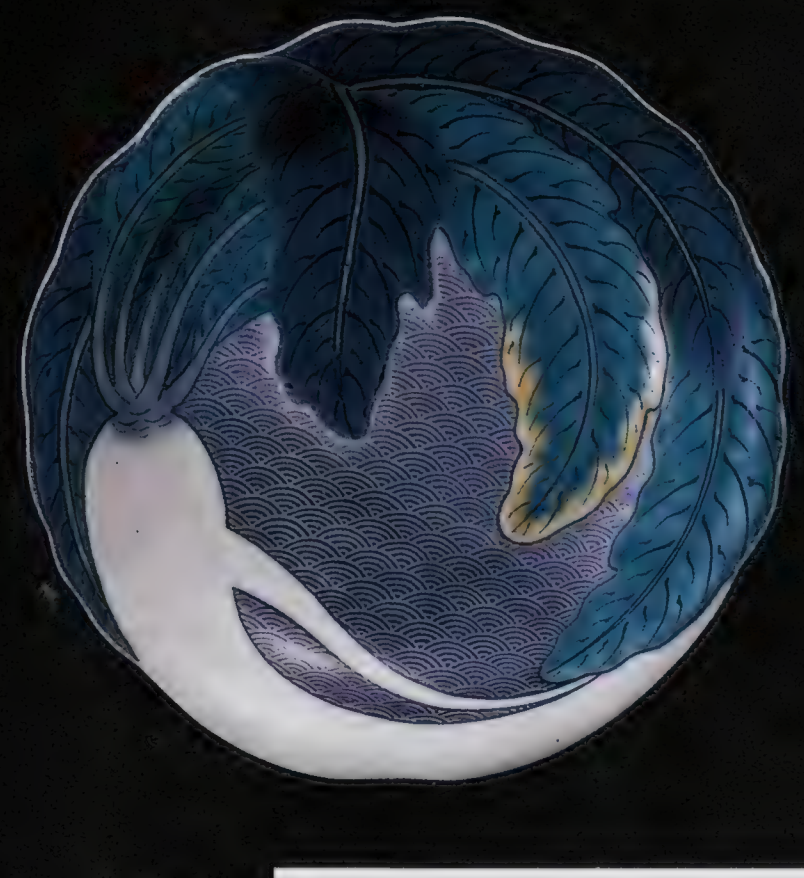
exhibition may have been functional combat gear, but their use under the Tokugawa regime became increasingly ceremonial. The less practical they had to be, the more fantastic the helmets became. One example in the show takes the shape of an inverted lacquer bowl; another is surmounted by gargantuan rabbit ears.

Under Ieyasu and his successors, Japan enjoyed the longest period of internal peace it has ever known. During this time, the martial arts receded in importance and the patronage and practice of the civilian arts—painting, poetry, calligraphy, theater—flourished. A vibrant popular culture developed and new styles of artistic expression emerged. By the 18th century, the population of Edo had grown to one million, making it the largest city in the world, with an influence so profound that its name came to denote the culture of all Japan.

The exhibition includes an early 17th-century hanging scroll portrait of Ieyasu (p. 67), possibly posthumous, in which he appears more religious than martial in aspect, reflecting the fact that many contemporaries regarded him as the incarnation of a Buddhist-Shinto deity. Even though he is seated on a platform we see from above, his imposing air and the steps at the bottom of the picture create the impression that we are looking up at the great shogun.

Although Buddhist temples remained centers of influence and the country's rulers espoused Neo-Confucian beliefs, to a large extent Edo society was an urbanized one. "Urban customs and fads spread throughout the land, traveling with daimyo and samurai as they returned from their attendance duties in Edo," scholar Herman Ooms notes in the exhibition catalogue. "In addition, rural men and women sought temporary employment in towns and cities during the slack agricultural season or after

Although the demimonde figures in this "pleasure depiction" tableau are arrayed against a background nearly devoid of setting, their clothes and poses suggest a bordello scene.



The bold design of the 19th-century Kabuki costume (opposite) typifies Edo style. Exaggerated wrinkles define a 17th-century No mask of an old man (left). The strikingly modern-looking porcelain dish with radish (below) was made c.1680. Rabbit ears embellish a 16th-century helmet (bottom).

falling on hard times. This led to an environment where status distinctions were not observed as the authorities had wished. . . . " Among the fads that spread from Edo and other cities were eye-catching color wood-block prints that promoted the new rage for Kabuki and other popular entertainments. "These works have come to represent Tokugawa art par excellence—and deservedly so," writes Ooms, "for this was the period when commoners put their mark on the world of culture for the first time in Japanese history."

The "Edo" exhibition has been organized in conjunction with the Japan Foundation and Japan's Agency for Cultural Affairs, the Bunkacho, which each year sends one major exhibition of Japanese art abroad. The show, sponsored by NTT (Nippon Telegraph and Telephone), is a two-part event because so many of the objects are too vulnerable to be exposed to light for more than six weeks a year. All are reproduced, however, in the show's lavish catalogue.

The Bunkacho is the authority that designates artifacts as National Treasures or Important Cultural Objects.

The National Gallery show deliberately breaks with the Bunkacho custom of grouping artworks by a hierarchy of media: paintings, sculptures, ceramics and lacquer, textiles and prints. In that conventional framework, says the exhibition's guest curator, Robert T. Singer of the Los Angeles County Museum of Art, "you can make points about different kinds of paintings or ceramics, for example, but you can't make points across various media." And that is just what Singer wanted to do in "Edo."

In feudal Japan, he notes, many artists worked in several modes, and little distinction was made between "pure art" and "functional art." In Edo-period society, he continues, "the increasing economic clout of the merchant class led to the transformation of cultural forms that were once the

ISHIKAWA PREFECTURAL MUSEUM OF ART; IMAEMON MUSEUM, SAGA PREFECTURE; NATIONAL MUSEUM OF JAPANESE HISTORY, CHIBA; P. 64 TOKYO NATIONAL MUSEUM

preserve of court and warrior elites, and the arts became accessible to members of all social classes." To track this shift, the show examines a range of media from the point of view of six emergent themes: Edo style, samurai, travel and landscape, religion, work, and entertainment.

No survey exhibition of Edo culture has ever been attempted in Japan. The two-and-a-half-century timespan is considered too long, the present case, that object is in the "entertainment" section of the exhibition. It is known as the *Hikone Screen* (c. 1620s-40s), six panels painted on a gold-leaf ground depicting demimonde figures—perhaps a bordello scene—in old Kyoto. "It's a magnificent work," says Singer, "and many of the most serious scholars and collectors have never even seen it. Most people will be amazed to find that it's only three feet tall. The Bunkacho *shamisen*—three-stringed instruments associated with Kabuki theater—and play a board game that resembles backgammon. "The male youth leans on his long sword, an action far removed from the military spirit that dominated depictions of men a few decades earlier," writes art historian Nicole Coolidge Rousmaniere in the show's catalogue. "The screen represents not just a parody of traditional Chinese accomplishments but a com-

The diversity of urban life and work are elaborately portrayed in this detail from a pair of mid-18th-century screens titled *Occupations and Activities of Each Month*.

fund of significant artifacts, unmanageably large. "Probably 98 percent of the historic Japanese art still extant is Edo," says Singer. In a sense America's distance from Japan made the National Gallery project feasible, even though there is an inevitable sacrifice of historical detail in presenting Japanese culture to a foreign public. Another problem is the justifiable reluctance of Japanese lenders to part with irreplaceable objects.

The curator of a show such as this, says Singer, "tries to get one National Treasure that has never left Japan before and that makes everyone in the field gasp when they see it." In the resisted sending it because they, understandably, hate to set a precedent for allowing such an important work to travel abroad. It is in Part II of the exhibition, which begins on January 13, and it has its own airplane and its own courier."

The *Hikone Screen* belongs to a genre newly favored in Edo-period art known as *yurakuzu*, or "pleasure depiction" screens. Its six panels, now separated for conservation reasons, appear to parody the traditional Chinese theme of the Four Accomplishments: calligraphy, painting, music and board games. The figures on the screen write love letters, pluck mentary on past and present. The youths are all clothed in the latest fashions but set against a gold ground with no indication of setting." The only background is a medieval-style landscape screen (a thing of the past used here to represent painting), which is folded in such a way as to enclose a blind musician. "The past is encapsulated," concludes Rousmaniere. "The present concerns revolve around fashion and ornament. A new age of leisure has arrived."

In conjunction with the exhibition, the National Gallery is offering an extensive program of events that demonstrate the living legacy of Edo

culture. Among them are historical dramas from Japanese cinema, performances of Kabuki and marionette theater, traditional Japanese dance, taiko drumming and acrobatics.

Singer's first triumph as the show's organizer was securing loans of such priceless objects as the *Hikone Screen* and a recently discovered pair of 17th-century six-fold screens with a panoply of images thought to be the earliest depictions of Edo. The paintings, titled *Scenes of a Festival in Edo*, portray a religious procession snaking through the city, bearing portable shrines past the shogun's castle. These screens, shown publicly for the first time in Washington, are such a recent discovery that scholars have only begun to decode their meaning.

Singer's other major accomplishment was convincing the Bunkacho to accept as representative of Edo-period art the paintings and calligraphy of Zen masters such as Hakuin Ekaku and Sengai Gibon. Sengai's *Frog in Zen Meditation* (p. 68) is an exemplary Zen ink painting. The frog is little more than a doodle, but it fixes its gaze on us and wears a riveting smile. "If by sitting in Zen meditation a human becomes a buddha . . . " the painting's inscription reads. But we do not know whose thought this is—the frog's? the artist's?—nor how to complete it. Perhaps its very incompleteness, and the work's easy spirit, are all that Sengai can show us of the enlightenment the Zen practitioner hopes to attain.

"Hakuin has only recently gained limited acceptance in the official canon of Japanese art history, and Sengai is still an outsider," says Singer. "You won't find their work on display in the Tokyo National Museum or in the Kyoto National

Tokugawa Ieyasu appears as a Buddhist-Shinto deity in this 17th-century scroll.

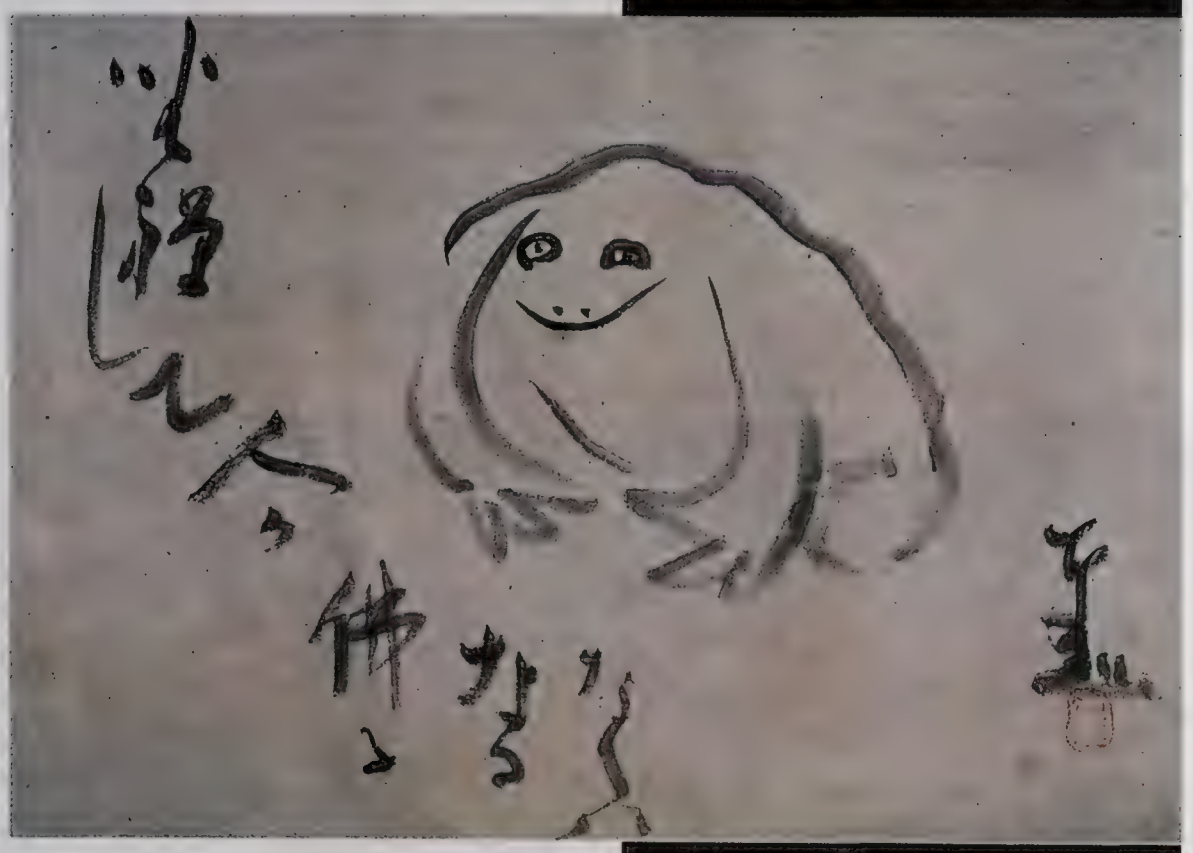
UNIVERSITY MUSEUM, FACULTY OF LETTERS, KYOTO UNIVERSITY

Museum. They were a real hard sell. I'm grateful to the Bunkacho for allowing me to expand the envelope."

From the 6th to the 16th century, Japanese art had been essentially religious in character. But in the Edo period, explains Singer, "constraints on the production of religious art began to loosen . . . and the audience became increasingly diverse." Evidence of that process can be discerned in such images as Ito Jakuchu's irreverent *Vegetable parinirvana* (c. 1780), another eccentric ink painting, which re-envisions the scene of the Buddha's death as a still life. The supine Buddha appears in the center as a long white radish. All around him are attendant deities and aggrieved disciples: turnip, eggplant, melon, persimmon, bamboo shoots.

The requirement that all daimyo march repeatedly between capital and provinces meant that roads had to be well maintained. Better roads, under the new political stability and consequent prosperity of the lower social ranks, enabled people to visit famous scenic or sacred places that they had once known only in poems or paintings. The call for reminders of those visits helped fuel the traditional artistic fascination with landscape, which burgeoned during the Edo era. The exhibition features a number of landscape scenes, including several prints from Katsushika Hokusai's popular series "Thirty-six Views of Mount Fuji," done in the 1830s, and a stylized, ambiguously allusive painting by Sakai Hoitsu titled *Maple Trees in Spring and Autumn,* from 1818.

Above: A hanging scroll by Mori Sosen (1747-1821) captures a family of macaques in a persimmon tree with unsettling verisimilitude. Below: Economy of line characterizes Sengai Gibon's *Frog in Zen Meditation.*



By the mid-19th century, near the end of the show's chronology, we can recognize the new popular demand for art in a wood-block print such as Utagawa Kuniyoshi's *The Warrior Miyamoto Musashi Subduing a Whale* (c. 1847-50). The three-panel print depicts the legendary swordsman Musashi astride a thrashing whale, about to administer a deadly thrust. Musashi was a real historical figure of the early Edo period—an invincible samurai who later became a masterly painter. (Two works by him are in the show.) But Kuniyoshi has turned him into a superhero who also personifies the bygone grandeur of Japan's feudal age.

Visitors will leave this exhibition with a kaleidoscopic vision of Edo culture and fresh questions: Was the fading of religious belief something common to the modern era in East and West alike? Are the beautiful things we see here really windows on an unfamiliar way of thinking, or just exotic pleasures?

The Tokugawa regime would continue until several years after Commodore Matthew Perry sailed into Edo harbor and forced modernity on the Japanese through new forms of international trade. But as the exhibition argues, despite its self-imposed isolation, Japan by then had in its own way already begun to join the modern world.

Author Kenneth Baker is the art critic for the San Francisco Chronicle.

MUSEUM OF ARTS, TOKYO

Discover the Wonders Down Under

Uluru (Ayers Rock)

It doesn't get any wilder than here.

Australia is the land of discovery. And our phenomenal wildlife never fails to amaze our international visitors. Of course you know, Oz is home to kangaroos, koalas and emus. But here is also where you'll find creatures like the duck-billed platypus, so odd that when presented with one 18th-century British zoologists doubted anything so weird could exist. Most considered it a composite fake assembled by Chinese taxidermists as an elaborate hoax. Australia's flora is unique as well, including "botanical dinosaurs" in our ancient tropical rain forests and the world's oldest plant in Tasmania. Most of these natural wonders, both plant and animal, are located in one or more of our 11 World Heritage areas. So what's stopping you from seeing it all? Australia is a lot closer than you think. A flight from the United States is just about the same as getting to most European destinations. So it's really no wonder why everyone wants to discover the land down under.

Flinders Ranges

Australia

1-888-8-KANGAROO (toll free)

Take An Eco-tour To Paradise

Russell Falls

Australia's tropical far north is known as the 'Top End'. Here, beyond the Northern Territory's capital city of Darwin, lies Australia's biggest national park, Kakadu. This is real Crocodile Dundee country. See 'crocs' basking on riverbanks and thousands of birds flocking on the wetlands. You can also visit Aboriginal rock-art sites containing some of the world's oldest artworks. South of Kakadu, Nitmiluk (Katherine Gorge) National Park features sheer gorges with torrential seasonal waterfalls, best viewed on a canoe trip, while nearby Litchfield National Park is studded with fantastic twisted sandstone formations.

Devil's Marbles

As you head towards the Territory's southern frontier, you'll find yourself in the deserts of Central Australia. Spend time around enormous Uluru (Ayers Rock) with an Aboriginal guide and learn about the plant and animal life of the region, unique in its ability to exist in this harsh climate. Later, at sunset, watch as Uluru's colors change from bright red to a majestic purple.

Enjoy the many excellent accommodation options of Ayers Rock Resort before heading out to explore other parts of the region including Kings Canyon, Palm and Rainbow Valleys, and Standley Chasm in the MacDonnell Ranges which lie between Uluru and the legendary Outback town of Alice Springs.

FEELING BUSHED? PARK IT.

In South Australia, you'll find more national parks per capita than anywhere else in the world. Cleland Wildlife Park, inhabited by kangaroos, wallabies, dingoes, koalas and emus, is just a 15-minute drive from the state capital, Adelaide, and a great place to go walkabout. North of Adelaide, on the edge of the Outback lie the starkly beautiful Flinders Ranges, an ancient mountain range

Great Barrier Reef

dotted with waterholes, hot springs, gorges and mineral deposits. The Flinders Ranges offer the opportunity to spy colourful parrots, wedge-tailed eagles, rock wallabies, emus and goannas in their natural habitat. Arkaroola Wilderness Sanctuary is famous for its half-day 4WD Ridgetop Tour.

But perhaps our best-kept secret is Kangaroo Island, 30 minutes by air from Adelaide. The island was once a haven for escaped convicts, but today it has become a natural showcase for kangaroos, koalas, brushtailed possums, sea-lions, fur seals, echidnas and even an occasional platypus. Night time brings out large numbers of these animals and also colonies of penguins. The 4WD tours that operate here are among the best in Australia.

THE DEVIL YOU SAY

Believe it or not, Tasmania, is more than just an island state south-east of the Australian mainland. It's nearly one big national park. One World Heritage listed area, known simply as "The Tasmanian Wilderness," covers 20 per cent of the island and is more than half the size of Vermont.

One of the first things you'll notice about Tasmania is how its environment differs from the rest of Australia - from the mountain peaks to the temperate rain forests. Here's where you'll also see wildlife that you won't find anywhere else in the world, most notably the robust and noisy Tasmanian Devil. It's easy to feel one with nature in Tasmania, especially if you're staying at one of our wilderness lodges like Cradle Mountain Lodge on the doorstep of the Lake St. Clair/Cradle Mountain National Park and Freycinet Lodge near the pink granite cliffs of the Freycinet Peninsula.

THE GREATEST REEF OF ALL

Tropical North Queensland is the only spot on the planet where two World Heritage areas lie next to each other. One of them is the Great Barrier Reef Marine Park. Not only does the reef provide a fabulously colourful home to thousands of rainbow-coloured fish, but it is also the world's largest living thing, that's one of the things that makes it so great.

Cairns is the prime gateway to Tropical North Queensland. Cruises and sailboats head from Cairns daily to Green Island, Fitzroy Island and the outer Reef. Visitors can peer through a diving mask or a glass-bottom boat at coral and marine life. Step out of the water and you are in Daintree National Park, the world's oldest living rainforest, and home to unique plant species millions of years old. More than 225 species of birds flit through the forest shadows. Why not stay in the rainforest at one of the wilderness lodges and enjoy the silence.

Queensland is also home to a host of other significant World Heritage listed natural attractions including Fraser Island, the world's largest sand island, and the sub-tropical rainforests of Lamington National Park in the Gold Coast region.

THERE'S MORE TO SEE, NATURALLY

No doubt Australia's natural surroundings are as unique as our people, and just as welcoming. A perfect place to explore some of the most fascinating creations Mother Nature ever offered, and discover something new about yourself as well. So come on down, we'd love to show you the wonder we call home, that you call Australia.

Australia

1-888-8-KANGAROO (toll free)

EXPERIENCE THE NATURAL WONDERS OF AUSTRALIA

Kangaroo Island

Simply the best way to discover the many wonders of Australia is with people who know it best, Qantas Vacations. Experience a sun rise over the vastness of the Red Center from a hot air balloon. Or encounter first-hand the largest living organism on Earth, the beautiful and awe-inspiring Great Barrier Reef. It's all waiting for you. Qantas Vacations have been helping travelers explore the wonders down under for more than 12 years. Most of our staff are Aussies, so they can offer you expert knowledge in assisting you to customize your own Aussie experience. Not only do you get expert help, but when you travel with Qantas Vacations, you have access to the best prices, making your visit to Oz simply the best vacation ever.

QANTAS VACATIONS

Wonders of the Red Centre, the Great Barrier Reef and the Rainforest

11 days from $2,899

- Round trip international air between Los Angeles or San Francisco and Sydney and all domestic air on Qantas Airways.
- 2 nights Alice Springs including transfers, accommodation at the Alice Springs Resort, the famous Take a Camel to Dinner tour, and an early morning Outback Ballooning experience.
- 2 nights Ayers Rock Resorts including ground transportation to/from Alice Springs, accommodations at Sails in the Desert, tours of Ayers Rock (Uluru) and the Olgas (Kata Tjuta), a barbecue dinner, as well as a stop at Kings Canyon on the way back to Alice Springs.
- 4 nights Tropical North Queensland including accommodation at the Thala Beach Lodge, a full day excursion to the outer Great Barrier Reef with Quicksilver and a full day four-wheel drive excursion into the Daintree Rainforest.

Southern Wildlife and Wonders

11 days from $2,459

- Round trip international air between Los Angeles or San Francisco and Sydney and all domestic air on Qantas Airways.
- 2 nights accommodation Stamford Plaza Adelaide including transfers.
- 2 day/1 night Kangaroo Island tour including airfare, transfers, accommodation and 2 days comprehensive four wheel drive island adventures.
- 5 days Hertz car rental in Tasmania.
- 3 nights accommodation Cradle Mountain Lodge in World Heritage listed Cradle Mountain/Lake St. Clair National Park.
- 2 nights accommodation in your selection(s) of the Historic Houses of Tasmania

QANTAS VACATIONS

Simply the Best!

(800)682-6016

Prices based on double occupancy from Los Angeles or San Francisco, and includes all airfare, accommodations, transfers, and sightseeing as specified above. *Taxes of approximately $70 per person not included. Other conditions apply. CST 2001136-50

Deck the halls with sheets and folly

CHRISTMAS LAUNDRY

BY RICHARD CONNIFF

ONE AUTUMN NOT LONG AGO, MY FAMily moved out of our beloved old house into a temporary rental near the beach. All our worldly goods were in storage, and we were bereft of our customary New England amusements—turning the compost heap, cutting the hedge, fixing the loose shutter that flapped in the north wind. Then we discovered a substitute in our new backyard, a festive, umbrella-like icon of Ozzie-and-Harriet days. I mean the clothesline.

It seems strange to admit in middle age, but neither my wife nor I had ever really used one before. For us, the challenge of drying the

ILLUSTRATIONS BY JEFF SEAVER

laundry had consisted entirely in choosing between the knit cycle or permanent press, and overcoming the demon of all dryers, which is, of course, static cling. It dawned on us in about the third week of using the clothesline that something new and wholly unexpected was taking place.

"Are you trying to beat me to the laundry?" my wife demanded one sunny morning.

"Don't be absurd," I said. I had spent much of our marriage, including the arrival of our three children, pretending such a thing as laundry did not exist, except now and then to note with puzzlement that the sock drawer seemed to need filling.

But the truth was that both my wife and I had discovered the pleasure of hanging clothes on the line. The simple wooden pegs. The radiant morning sun. The way the shirts seemed to lift and dance together in the wind. Every once in a while, when I'd just hung up a sheet, the wind would take it and spin it gently away from me to belly out like a sail, bringing the next empty section of clothesline directly over my laundry basket. It gave me a sense of harmony with the elements to start the day like this, and also to finish the day between sun-smelling sheets.

My wife and I had discovered the pleasure of hanging clothes on the line.

Moreover, it had occurred to us in our frugal New England souls that sunlight was cheap, and the electric dryer surely was not. The clothesline required no combustion, produced no carbon dioxide, and was guiltless of both global warming and static cling.

About the only material goods from our old house to escape storage were our best bedsheets, and my wife seemed to take particular pleasure in hanging them out to dry. They were pale yellow, with blue-and-white borders, and they were quite lovely to see caught up with the wind on one side and the sun on the other. The way she stood back and watched them billow made me think the sheets were a lingering tie to our old home.

We both agreed that this could not go on. Winter was coming, and it was already evident that neither of us was much good at bringing the laundry back in again. We tended to neglect this chore until dusk, or the beginning of a rainstorm. Often, we delegated it to one of our boys. They didn't share our enthusiasm for the clothesline, which made their cotton gym socks stiff, and they suffered from Wretched Hearing in Adolescents (or Wha? Syndrome). So it was sometimes two or three days before the laundry came back in. But December came around, and even on frosty mornings my wife and I were still vying to be the first one out the door with a basket of new laundry.

Reserve tickets now for one of the most extraordinary exhibits ever shown in the U.S.

Treasures of Russia

from **PETERHOF · PALACES** *of the* **CZARS**

OPEN NOW THROUGH APRIL 15, 1999

The largest collection of historic Russian art objects in the United States will be on display at the resort known for bringing you the best the world has to offer. View magnificent pieces from Fabergé, including the Chanticleer Egg which is on loan from the Forbes Collection New York for this special engagement. The never-before-seen opulent Romanov-dynasty treasures of the Czars will be on exhibit at the Rio before it returns to its home at the State Reserve Museum, St. Petersburg, Russia. Don't miss this once in a lifetime opportunity. Make room reservations now, **1-888-PLAY RIO.**

MAJOR SPONSORS:

Bank of America

Bernard K Passman GALLERY

AUDIO TOURS PROVIDED BY:

ANTENNA AUDIO

Only at the Rio ALL-SUITE CASINO RESORT LAS VEGAS

www.playrio.com or www.peterhof.com

TICKETMASTER (702) 474-4000

One day early in the month, the whole family was out for a walk on the beach, and we started to make plans for the coming Christmas season—where to put up the tree in the new house, what kind of stuffing to make for dinner. Suddenly, it dawned on my wife that our Christmas lights, the tree skirt, the Mele Kalikimaka CD and all our ornaments were in storage. A gloom descended upon us, and we walked on down the beach in silence. Without our old house, it would not seem like Christmas at home. Without our familiar tarnished ornaments, it would hardly feel like Christmas at all. Jamie, our eldest son, picked up the delicate spiral shell of a whelk and turned it over idly in his hand. "Why don't we make ornaments out of seashells?" he said.

"Like Mr. Whiskers in *Cranberry Christmas*!" our 8-year-old daughter, Clare, exclaimed, recalling a favorite book about a New England Christmas. So we began to gather up crab carapaces, whelks, mussels, clamshells and slipper shells. We took them back to the house to bleach overnight in diluted chlorine. Then we fashioned hangers for each shell out of old fishing line. I happened to be on the phone one night with my sister, and I told her what we were up to. "Oh, what a memorable Christmas this will be," she said. Being humbuggish by nature, I listened for ironic undertones: "You mean you're going to decorate your Christmas tree with dead shellfish?" or "Don't you think that's just a little Martha Stewart?" But my sister is good-natured and meant it in the best possible joy-to-the-world way.

A few nights later, the children began decorating. They took the shells out to the backyard and hooked them one at a time over the end of a stick. Then one child held up the stick under the porch floodlight while the other sprayed the shell with green

And there hung my wife's favorite bedsheet, covered now in red, green and gold paint.

or gold or red paint. The air was crisp, and the paint made beautiful drifting cloudlets of color under the light. The shells coming back into the house one by one were also beautiful, especially the whelk egg-case chains, which spiraled down from the branches like the ocean equivalent of icicles. At the kitchen table, the children sprinkled the clamshells and crab carapaces with gold glitter, and by the end of the evening, we had a beautiful Christmas tree.

The next morning, Jamie and I were up early to inspect our handiwork. He happened to glance out the kitchen window, and I heard him gasp. The night before, my wife had asked him to bring in the clothes from the line, and he had forgotten. There in the brightening dawn, an entire load of laundry still hung, just beyond range of the porch floodlight, just downwind from the Christmas ornament decorating area. And there hung one of my wife's favorite bedsheets, a last vestige of our old life, covered now in a wild overspray of red, green and gold paint.

"I don't know you," I muttered to my son.

"Dad!" he replied.

"OK, OK, let's think about this."

My younger son, Ben, the problem-solver and peer-mediator, came up with the intrepid solution. In the half-light of morning, we crept out to the clothesline and took down everything

© 1998 Tom's of Maine

Tom's helps care for more than just your teeth.

Tom's OF MAINE

Caring for teeth is in our roots. For over 25 years, we've used safe, effective ingredients from nature to help people protect their teeth. In fact, our fluoride toothpaste has been tested and proven effective in fighting cavities. And you get that protection without any of those bright color dyes, artificial preservatives and sweeteners, like saccharin, that are common in most other toothpastes.

What's more, Tom's also helps care for trees and other precious resources. That's why we use only 100% recycled paperboard for our boxes. It's also why we always dedicate 10% of our profits to worthy causes, like the environment. So look for Tom's wherever toothpaste is sold. We'll help take good care of your teeth and a whole lot more. Come visit us at www.toms-of-maine.com. Thanks for reading.

ADA

*Tom's of Maine Natural Fluoride Toothpaste has been shown to be an effective d

but the sheet, which had shielded most of the laundry from damage. (We could live with green underpants.) Then we proceeded to empty all three cans of spray paint on the prized sheet. Jamie stepped back after a while to consider the artistic effect.

"It's kind of gaudy," he said, and he moved in again to obliterate one last bit of yellow-and-blue with the red spray paint.

"It's garish," Ben agreed, dismally. The sun was growing brighter and time was running short.

"Let's just call it festive," I concluded.

So we took the sheet inside and bundled it around the base of the Christmas tree. The paint was still wet in the globby, thick folds, so we sprinkled on glitter for the final artistic touch. The living room smelled like an auto body shop.

We delegated Clare to show her mom our new Christmas tree skirt. Clare didn't entirely understand what was going on, which was a good thing. Maybe it wasn't in the best possible spirit of the season, but my sons and I figured that cowering behind an innocent child was a reasonable survival strategy. Also, cuteness was a factor.

Clare hurried to get her mother out of bed and proudly brought her in to see the new Christmas tree skirt.

"Oh, my God," my dear wife gasped, and tears sprang to her eyes. "My sheet!" she cried.

Clare's eyes widened with horror, suddenly recognizing our awful betrayal. "Mama!" she sobbed.

Seeing that look, my wife knelt down and embraced her daughter, pausing just long enough to glower at the boys and me with daggers of wrath. But her voice betrayed nothing. "Oh, Clare," she said, "it's just beautiful. It's the most beautiful tree skirt I've ever seen."

Each Christmas we still bring out the spray-painted whelks and slipper shells, and spread the gaudy tree skirt around the tree.

After we started to breathe again, the boys and I smiled down beatifically on this touching mother-daughter scene. Then, quietly as possible, we faded from the scene and retreated to the far corners of the neighborhood.

So the tree skirt stayed, and as my sister said, it was a memorable Christmas, possibly the most beautiful one we'd ever had—somewhere between festive and gaudy, as good Christmases so often seem to be. The shells glittered among the tree lights, and beneath them, that painted sheet took on a lovely, luminous quality.

When spring came that year, we moved out of our rental house and into the new house we had been building, just around the corner. We retrieved all our earthly goods from the storage company and settled in among our old chairs and pictures.

In time, our children have grown older. But each year at Christmas we still bring out the spray-painted whelks and the slipper shells, and we put on the Mele Kalikimaka CD. Then, together, we spread out the gaudy tree skirt and gather it around the tree, to remind us of that first Christmas we spent at the beach.

By the way, my wife and I are still vying to see which of us gets to hang the laundry on the new clothesline, and even now, I have to confess, it seldom gets brought back in on time—especially around Christmas.

Richard Conniff's new book, Every Creeping Thing—True Tales of Faintly Repulsive Wildlife (Henry Holt & Co.), will be published this month. Jeff Seaver is a freelance illustrator who works out of New York City.

It goes about a country mile.

(City mileage may vary.)

The longest-distance cordless phone there is.

Panasonic introduces GigaRange, the world's first 2.4 gigahertz digital cordless phone.
Never before has a cordless phone been able to go so far and sound so good.
For more info call 800-211-PANA or visit www.panasonic.com/gigarange

2.4GHz GIGARANGE

Performance may vary depending upon location and atmospheric conditions.

Panasonic®
just slightly ahead of our time®

people in mind

We all share the same roads.
We all share the
world they run through.

General Motors is hard at work developing advanced technologies to reduce pollution, such as hybrid and fuel cell vehicles. But planning for tomorrow isn't stopping us from protecting the environment today. GM already makes America's first modern production electric vehicle, the EV1. In partnership with The Nature Conservancy since 1994, we've helped preserve thousands of acres of land. We've even established our own worldwide environmental principles. Everyday, in the work we do and in the products we create, the people of General Motors share the same commitment. Finding better ways to make the cars and trucks people count on.
It's what makes us GM.

GM® General Motors®

CHEVROLET PONTIAC OLDSMOBILE BUICK CADILLAC GMC
www.gm.com

General Motors Corporation © 1998

FOR DECADES, AFRICAN-AMERICAN REGULARS WERE THE

BUFFALO SOLDIERS

MOST EFFECTIVE TROOPS ON THE WESTERN FRONTIER

ON SEPTEMBER 24, 1868, MAJ. GEORGE A. FORSYTH MUST HAVE WONdered if he would live to see the next morning. He lay stretched out beside the rotting carcass of his dead horse, in the willow brush and tall grass that covered a small island in the dry bed of the Arikaree River, on the vast plains of eastern Colorado Territory. All around him lay dead and wounded men—his men. And beyond the empty riverbanks, just out of rifle shot, circled the 700 Cheyenne and Oglala warriors who had kept the major's detachment trapped on this island since the 17th.

BY T. J. STILES ▪ ILLUSTRATIONS BY ARTHUR SHILSTONE

Full-scale war with the tribes of the Great Plains had just erupted; Forsyth had taken his 50 handpicked scouts out of Fort Hays in Kansas on a march to find the enemy. But the Native Americans had found Forsyth first.

On the 17th, the Cheyenne war chief the soldiers called Roman Nose had led hundreds of fighters on a dawn charge against Forsyth's camp. Their storm of bullets and arrows laid waste to his horse herd and left many of his men dead or wounded. The major himself collapsed as a slug tore into each leg and another creased his scalp. By the 24th, repeated charges and stealthy sniping had turned half his scouts into casualties; a horrific stench now rose from the dead men and animals. The survivors, who at first had used their fallen mounts as protection, now resorted to eating the horses' decaying flesh.

Unknown to Forsyth, a company of cavalry was searching for him. Two of his scouts had slipped through the besieging Indians and made their way to Fort Wallace in Kansas, where they had alerted Capt. Louis H. Carpenter, an old Civil War comrade of the major's.

The next day, the beleaguered scouts on that malodorous little island noticed that the Indians had drawn off. Then they saw why: in the distance they discovered movement, which gradually took the form of mounted men . . . cavalrymen . . . black cavalrymen. They were Captain Carpenter's troopers, pounding across the dry grass. This unit went by the name of Company H, 10th Cavalry—but Forsyth's men may indeed have known them by the name that the African-American troops earned from their Indian foes: they were the buffalo soldiers.

Forsyth's fight entered Western legend as the Battle of Beecher's Island, but few remember that he was rescued so dramatically by black troops. Despite a recent wave of interest in the professional African-American soldiers of the 19th century, many writers have treated them as a footnote to the history of the frontier. In fact, black regulars took center stage in the Army's great Western drama, shouldering combat responsibilities far out of proportion to their numbers (which averaged 10 percent of the military's total strength). Over the course of three decades on

The beleaguered scouts saw their foes had drawn off. Then they saw why: cavalrymen . . . black cavalrymen.

the frontier, the buffalo soldiers emerged as the most professional, experienced and effective troops in the service.

When Carpenter led his company into Forsyth's grim camp, only three years had passed since the end of the Civil War. Some 180,000 African-Americans had carried arms for the Union, filling out regiments, divisions, even an entire corps (the 25th, part of which occupied Richmond in the war's closing days). These were all-volunteer units, however, established for the duration of the war. Not one company in the standing Regular Army was open to African-American recruits. But on July 28, 1866, Congress provided for four Regular Army infantry regiments (the 38th, 39th, 40th and 41st) and two of cavalry (the 9th and 10th), to be composed exclusively of black enlisted men. The Army would *have* to accept African-Americans.

Almost immediately, the new black regulars found themselves in combat on the frontier. Lt. Col. George Armstrong Custer's wife, Elizabeth, described an incident in June 1867 (based on an account in one of her husband's letters), when 300 Cheyennes swept down on Fort Wallace, where Custer was in command. A squad of black infantrymen from the 38th had arrived to pick up supplies, when the white garrison spilled out to form a firing line.

Suddenly, a wagon pulled by four mules tore out to the line of battle, Elizabeth wrote. "It was filled with Negroes, standing up, all firing in the direction of the Indians. The driver lashed the mules with his blacksnake, and roared at them as they ran. When the skirmish line was reached, the colored men leaped out and began firing again. No one had ordered them to leave their picket-station, but they were determined that no soldiering should be carried on in which their valor was not proved."

Despite the brave showing, the 38th Infantry was not to last. On March 3, 1869, a new law ordained a general reduction in the Army: the 38th and 41st regiments were consolidated into the new 24th Infantry, and the 39th and 40th merged to create the 25th Infantry. Occasionally, companies from the 24th and 25th infantries served with their mounted counterparts, sometimes engaging in heavy combat. The lion's share of adventure fell to the special corps of black Seminole scouts—Indians of largely African descent (SMITHSONIAN, August 1991)—who served with the 24th Infantry under Lt. John Bullis. On the whole, however, the African-American infantry regiments missed out on much of the glory won by the black cavalry.

Throughout the frontier era, black soldiers endured nearly unbearable conditions. Indeed, they complained of receiving the worst of everything, including surplus equipment and cast-off horses; many white officers openly bemoaned their assignments and some abused their troops. Maybe worst of all was local prejudice—and the Army did little if anything to help. In Texas, for example, when a sheriff killed a black Medal of Honor recipient, shooting him in the back, nothing was done. A Nebraskan who killed three black soldiers, including another Medal of Honor winner, also went unpunished. And it was nearly impossible for African-American soldiers to get commissions. One man from the 9th Cavalry said of the regiments at Fort Robinson, late in the century, "not a single colored soldier has been promoted from the ranks to the grade of an officer . . . the army is decidedly against it."

The demands of frontier warfare, however, led to wide dispersion of most regiments, which placed tremendous importance on the leadership qualities of noncommissioned officers. That was certainly true of the 9th Cavalry, scattered across the rough Texas landscape in tiny, undermanned posts. Yet the 9th's sergeants and corporals were

precisely the men whom the Army thought most unsuited to soldiering and command: in the early years they were mostly former slaves, drawn primarily from the plantation country of Louisiana and Mississippi. Often illiterate in the beginning, these officers—and their troopers—displayed a voracious appetite for education, and they ultimately set the standard for professionalism. Desertion rates for many regiments surpassed 25 percent a year; not so among the buffalo soldiers. As the service newspaper reported, "The Ninth Cavalry astonished the Army by reporting not a single desertion for twelve months."

Before 1867 came to a close, the 9th Cavalry's raw recruits won the respect of every armed opponent anywhere close to Texas. Christmas day found Capt. William Frohock and Company K on a patrol at the Pecos River, 75 miles east of Fort Stockton. The troopers settled for the night in empty Fort Lancaster, a long-abandoned post. Three men, privates Anderson Trimble, Edward Bowers and William Sharpe, stood guard over the horse herd as the troops stretched out to sleep.

The next day, Trimble, Bowers and Sharpe found themselves surrounded by armed men on horseback. They were lassoed and dragged to their deaths behind their assailants' horses. Meanwhile, the strangers turned to the company holed up in Fort Lancaster.

Captain Frohock had trouble making out just who was firing on his detachment (the attackers were most likely Lipans, Kickapoos and Mexican outlaws). In the flurry of shouting men, ricocheting bullets, swirling dust and pounding hooves, he estimated that at least 900 opponents encircled his men. If his guess was correct, it meant that Company K—fewer than 70 troopers—faced more men than served in the entire 9th Cavalry.

For hours they fought, pumping bullets out of the carbines so fast the barrels grew blisteringly hot.

The inexperienced buffalo soldiers threw down a curtain of fire from their seven-shot Spencer carbines. For hours they fought, pumping bullets out of their carbines so fast the barrels grew blisteringly hot. Finally the enemy drew off, carrying away 20 dead and scores of wounded. The buffalo soldiers had triumphed; never again would the Lipans and Kickapoos dare to attack them so directly.

For eight years, the 9th Cavalry fought numerous pitched battles against Lipans, Kickapoos, Kiowas, Comanches—and the people destined to be their most determined foes, the Apaches. Then in late 1875, Col. Edward Hatch took the regiment into the Apache homeland, the New Mexico Territory. There he assumed the role of department commander, and his men devoted themselves to battling various Apache war parties that frequently struck out on raids off the reservations.

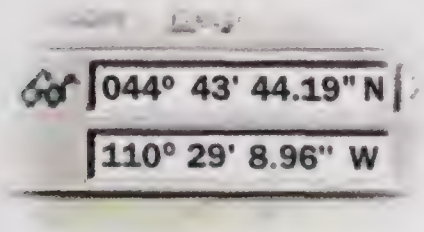
These warriors had long since mastered mountain guerrilla warfare. Unlike the Sioux, Cheyennes, Kiowas or Comanches, who fought primarily to keep ranchers and hunters off their homelands, the Apaches had lived for centuries among Hispanic settlements, alternately raiding and trading with neighboring villages. They knew how to lay expert ambushes in the steep cliffs lining the valleys of the Southwest, how to throw off pursuers by leaving behind elaborate dummy camps, how to camouflage cuts

Know all the ups and downs of a National Park before you even set foot in it.

Introducing Maptech® National Park Digital Guides

It's like having a Park Ranger at your elbow, helping you plan your trip.

Simply pop a CD-ROM in your PC or laptop. And up come maps, easy-to-use navigation software and a fact-filled "electronic guidebook."



Automatically displays coordinates of your position

By pointing-and-clicking, you can plot a course. Figure out where to stay. Learn about the park's attractions, trails, local geology, wildlife – and a whole lot more.

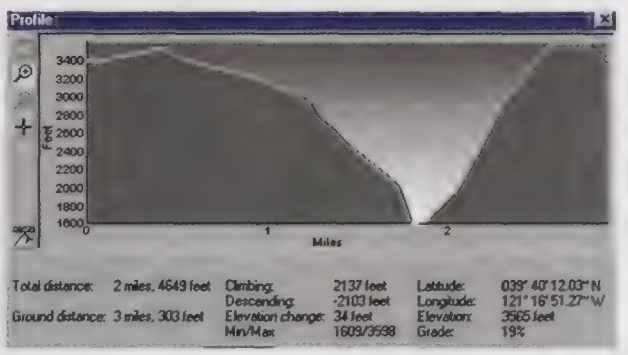
The maps include an official National Park Map – but it's combined with detailed, topographic maps from the U.S. Geological Survey. So, you see *exactly* how the land lies.

And there's a special edition of Maptech's Terrain Navigator software that lets you:

- Measure distances and elevations
- Zoom in four levels for "closeups"
- Print out customized maps to take with you

Want more out of your park trip? *This* is the place to begin!

Call up photos of attractions



Elevation profile lets you check "line-of-sight" to landmarks

If you'd like to know more about Maptech products, and get a free demo, visit our website, at www.maptech.com

Only $29.50 for each park, $69.50 for a region, $179.50 for all 54 National Parks. Available from the Lands' End® catalog, or from Maptech.

For a free demo, go to **www.maptech.com**
Or, for more information, mail this coupon or fax it to: **1-603-433-8505.**

To place an order, call: **1-800-627-7236** SM1298

Name _____

Address _____

City _____ State _____ Zip _____

Phone ( ) _____ Day / Night *(circle one)*

E-mail _____

Maptech, Inc.,
655 Portsmouth Avenue,
Greenland, NH 03840

© 1998 Maptech, Inc.

MAPTECH®

in telegraph lines by splicing them with leather thongs.

The 9th was in the field constantly. Pvt. Henry Bush remembered being "continuously on scouting service which subjected us to great exposure, such as sleeping in rains and snows in the mountains unprotected from the elements, sometimes no sleep for two days, sometimes subsisting on the most meager diet, sometimes marches of ninety miles . . . in a hot scorching sun." And when they did make contact, the fighting was ferocious.

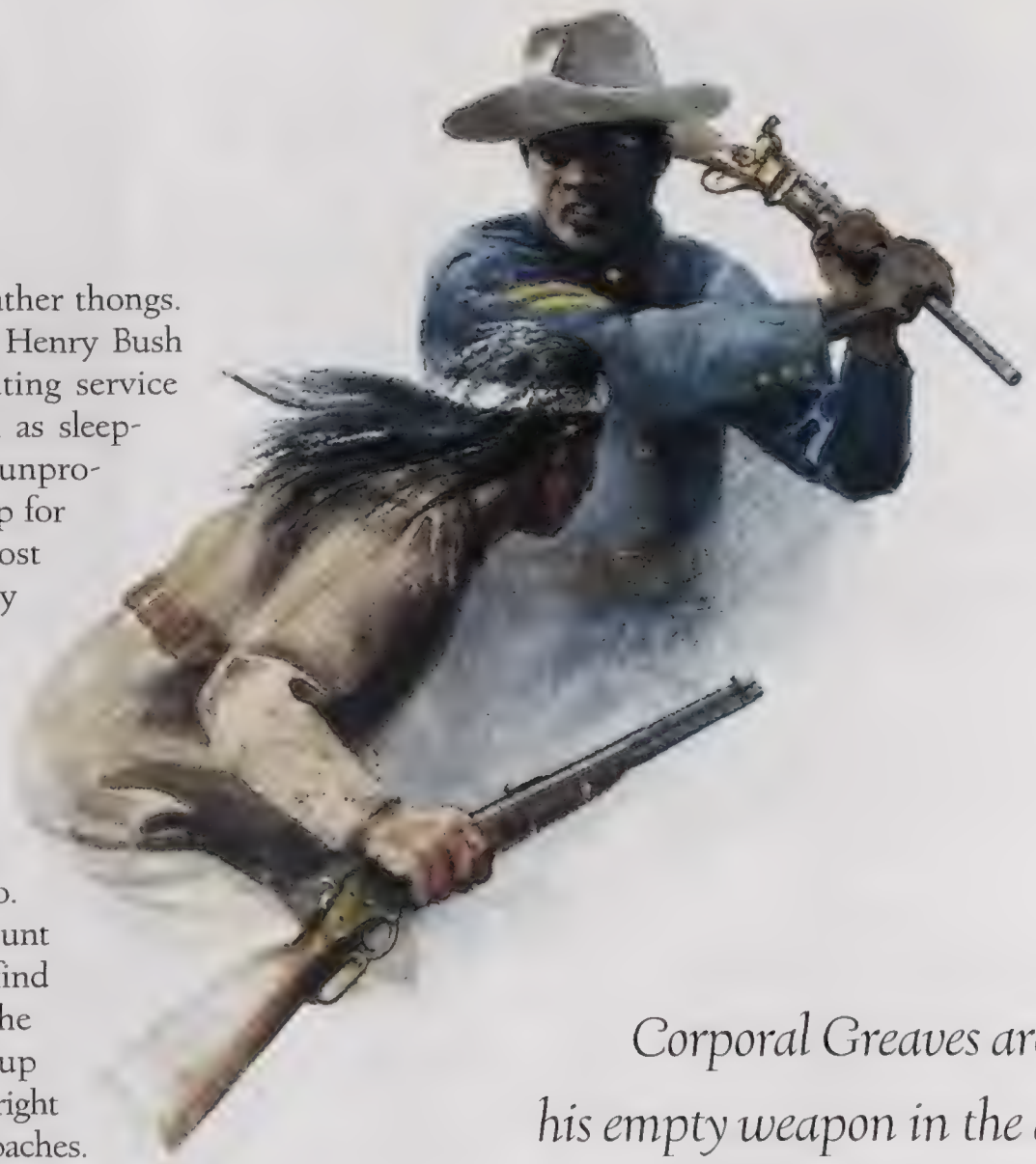
In January 1877, Capt. Charles D. Beyer learned that a party of Apaches had broken out of the San Carlos reservation in Arizona and had crossed into New Mexico. He issued orders to Lt. Henry Wright to mount six troopers and three Navajo scouts and find their trail. On a cold, clear, winter day, the detachment of buffalo soldiers clambered up through the rocky Florida Mountains, riding right up to the edge of a camp of more than 40 Apaches.

The troops immediately saw how precarious their situation was: ten men, deep in the mountains and far from help, surrounded by nearly five times their number. Even worse, they no longer carried the rapid-firing Spencer carbines, which carried seven rounds in a tubular magazine; they now used single-shot Springfields, while many Apaches wielded new multi-shot Winchesters.

Lieutenant Wright decided to brazen it out. He trotted his horse straight into the heart of the camp, followed by his tiny squad, and shouted for the Apache chiefs to meet him in council. The troopers slid off their saddles as Wright spoke to the Indians through a Navajo scout. He and his men, he said, would be happy to accept their surrender. The chiefs apparently did not laugh; as the negotiations continued, the soldiers noticed that the women and children were silently slipping away while the warriors encircled the detachment.

Suddenly Wright shouted for his men to break through the ring. At the first step forward, the Apaches shouldered their rifles. In an instant, 26-year-old Cpl. Clinton Greaves swiveled his carbine toward the closest warrior and squeezed off its single round. Leaping toward the line of warriors, he seized the barrel of his weapon and arced its wooden shoulder stock through the air, slamming it into the body of one of his foes.

As this powerful trooper—"a big fine looking soldier," another trooper recalled—swung left and right, the rest of the detachment fired and reloaded madly. Lieutenant Wright shot down a nearby Apache; privates Dick Mackadoo and Richard Epps shot three more warriors as lead



Corporal Greaves arced his empty weapon in the air, slamming it into the body of the warrior.

snapped through the air in every direction. The troopers frantically mounted and galloped through the opening Corporal Greaves had created. After a few seconds more of intense fighting, the Apaches themselves scattered to the mountain peaks for cover, intending to challenge the soldiers from afar. The troopers not only managed to get away unscathed, but left with 11 Apache horses.

Wright and his men earned nearly legendary status within the regiment for their brave stand in the Florida Mountains. But the highest recognition of all went to Corporal Greaves: on June 26, 1879, he became the second trooper in the 9th Cavalry to earn the Medal of Honor.

Soon the regiment came to grips with the leader who would prove to be its deadliest enemy of all: Victorio, chief of the Warm Springs band of Apaches. Tension had been building as the Bureau of Indian Affairs tried to shift his people to the San Carlos reservation in Arizona. After two escapes from San Carlos, Victorio and his band were permitted to remain at a reservation in their native New Mexico. Just when a measure of peace seemed to be in hand, lawmen arrived to arrest the chief for murder. In August 1879, he fled the reservation with 60 followers, soon to multiply to more than 300. The Victorio War had begun.

The men of the 9th Cavalry quickly learned how Victorio had won his reputation as a great war chief. He selected as one of his first targets the horse herd of Company E; on September 4, the Indians killed five troopers, wound-

Good guys

Even the bravest, most fearless crusaders find they need a dependable sidekick

have always ridden with

to help save the day. And sometimes, that means just picking up a carton of milk on the

a trusty companion.

way home from the office. The Toyota Camry. After all, even heroes need a car.

TOYOTA | *everyday*

©1998 Toyota Motor Sales, U.S.A., Inc. Buckle Up! Do it for those who love you. 1-800-GO-TOYOTA ✦ www.toyota.com

"When they recognized us as troops, they came out of their houses waving towels and handkerchiefs for joy."

ed three more and rode off with 46 animals. Shortly afterward, Victorio unleashed a well-planned ambush in the canyon of the Los Animas River, leaving as many as eight buffalo soldiers dead or wounded.

After these setbacks, Col. Hatch assigned Maj. Albert B. Morrow to lead the pursuit. Morrow's hard-riding troopers repeatedly made contact with Victorio's forces, engaging in bitter but indecisive fighting. The skillful Apache would slip away over the border into Mexico, where the 9th Cavalry's scouts could not follow.

On May 13, 1880, Sgt. George Jordan of Company K learned precisely where the Apaches were. This native of Tennessee had just made camp with 25 men at a stage station, having spent a long day escorting a train of supply wagons. As the detachment prepared for a well-earned night of rest, a courier rode in with a desperate message: Victorio was headed for the settlement of Fort Tularosa.

The sergeant called his men together. "They all said they would go on as far as they could," Jordan reported. At 8 o'clock in the evening, they began a hard march for the endangered village. At about 6 the next morning, the tired troopers rode into the silent town, its women and children peering out apprehensively through shuttered windows. "When they recognized us as troops," he recalled, "they came out of their houses waving towels and handkerchiefs for joy."

Sergeant Jordan boasted more than ten years of experience in the 9th Cavalry; he knew what it meant to command a detachment, and he knew how to fight the Apaches. After a brief rest, he set his men to work building a stockade. By the end of the afternoon, they were done; the men had not slept for at least 24 hours, but they could now lead the residents inside a hastily built fort.

As the sun dipped down to the west, Sergeant Jordan stood outside the stockade talking to a civilian when a shot cracked the quiet evening. Instantly dozens of bullets spattered the ground as Jordan and his companion sprinted for the fort. Soon scores of Apache warriors charged across the dry desert floor. "[They] tried time and time again to enter our works," Jordan reported, "but we repulsed them each time, and when they finally saw that we were masters of the situation they turned their attention to the stock and tried to run it off." Head-on attacks against an entrenched foe were not the Apache way; Victorio soon pulled away. "The whole action was short but exciting while it lasted, and after it was all over the townspeople congratulated us for having repulsed a band of more than 100."

Congress congratulated Jordan with the Medal of Honor.

Nine days later, a unit of Indian scouts severely shot up Victorio's camp, sending the chief flying into Mexico with Morrow's command snapping at his heels. The move set the stage for the final, decisive phase of the campaign—and shifted the burden to the rest of the buffalo soldiers: the men of the 10th Cavalry, led by Col. Benjamin Grierson, and those of the 24th and 25th infantries.

Grierson believed Victorio would reenter the United States in western Texas; to stop him, he decided to cast a net to ensnare the chief no matter which direction he turned. The key was water: only a handful of springs dotted the dry mountains southeast of El Paso. By guarding the most important water holes, and by posting a network of scouts along the Rio Grande, he could block any attempt to penetrate West Texas.

The night of July 29 found Grierson at Tenaja de los Palmos, a strategic water hole between Fort Quitman (to the west on the Rio Grande) and Eagle Springs (15 miles to the east). He had with him a half-dozen buffalo soldiers, one white officer and his 20-year-old son, Robert. Earlier that day, Grierson and his men had been met by three African-American troopers bearing a critical dispatch from the Rio Grande: the Apaches had been seen crossing the river into Texas.

It was no ordinary buffalo soldier who led the couriers; it was Lt. Henry O. Flipper, the first black graduate of West Point and an officer of the 10th Cavalry. "I rode 98 miles in 22 hours mostly at night, through a country the Indians were expected to traverse," he wrote. "I had no bad effects from the hard ride till I reached [Grierson's] tent. When I attempted to dismount, I found I was stiff and sore and fell from my horse to the ground. . . ."

After resting, Flipper left with orders that all available troops should make haste for Grierson's position. Meanwhile the colonel and his men spent the night throwing

eciao
PIAGGIO
www.vespa.com is an IBM e-business.
Test-drive the latest in Italian scooters while test-driving the latest in IBM Web servers.
IBM

up two stone breastworks atop the rocky ridge overlooking the water hole. Despite the desperate odds, Grierson had decided to make a stand. If he could deny Victorio access to the water in that canyon, he was certain that the Apaches would have to turn back to Mexico. The next morning, at about 4 o'clock, Lt. Leighton Finley rode in with reinforcements: a mere ten cavalrymen.

Young Robert Grierson would later scrawl in his journal a vivid account of the events that followed. Sometime after 8, as the little party finished breakfast, the scouts south of camp sent up the cry "Here come the Indians!" Then he saw them: dozens of long-haired warriors, rifles held at the ready as they nudged their horses through the canyon southeast of their position on the ridge.

As a dense cluster of Apaches rode slowly across the rough trail, the Indians heard the sound of galloping horses. Down Finley's buffalo soldiers came, snapping off shots as they thundered into the valley. "Several Indians hid in a hollow till Lt. F. passed, & then fired on his party," Robert wrote. "He had them on both sides of him & poured it into them thick & vice versa. The rifles sounded splendidly and you could hear the balls singing. Just as Lt. Finley was about to dislodge the Indians from behind a ledge, Capt. Viele's and Lt. Colladay's companies came & in the smoke and dust took F. for Indians and fired on him."

Capt. Charles Viele, Lieutenant Flipper and the troopers of Company C had just arrived from Fort Quitman. Now they fired on Finley by mistake; fortunately, both Viele and Finley pulled their men back to Grierson's breastworks. "All got back about the same time," wrote Robert, except one black trooper whose horse had been shot; after him galloped the resurgent warriors, convinced now that the battle had turned in their favor. "He got along as best he could—the Indians were nearly on him—he turned & fired his revolver & this checked them some."

Grierson ordered his men to fire. "We then let fly from our fortifications at the Indians about 300 yards off & golly!! You ought to've seen 'em turn tail & strike for the hills." In four hours of desperate fighting, the Apaches lost seven men; the 10th Cavalry, one trooper. The battle left Victorio short on food and water, and saddled with dead and wounded; he had no choice but to retreat to Mexico.

Lieutenant Flipper, the only African-American line officer, was the object of hatred by fellow officers.

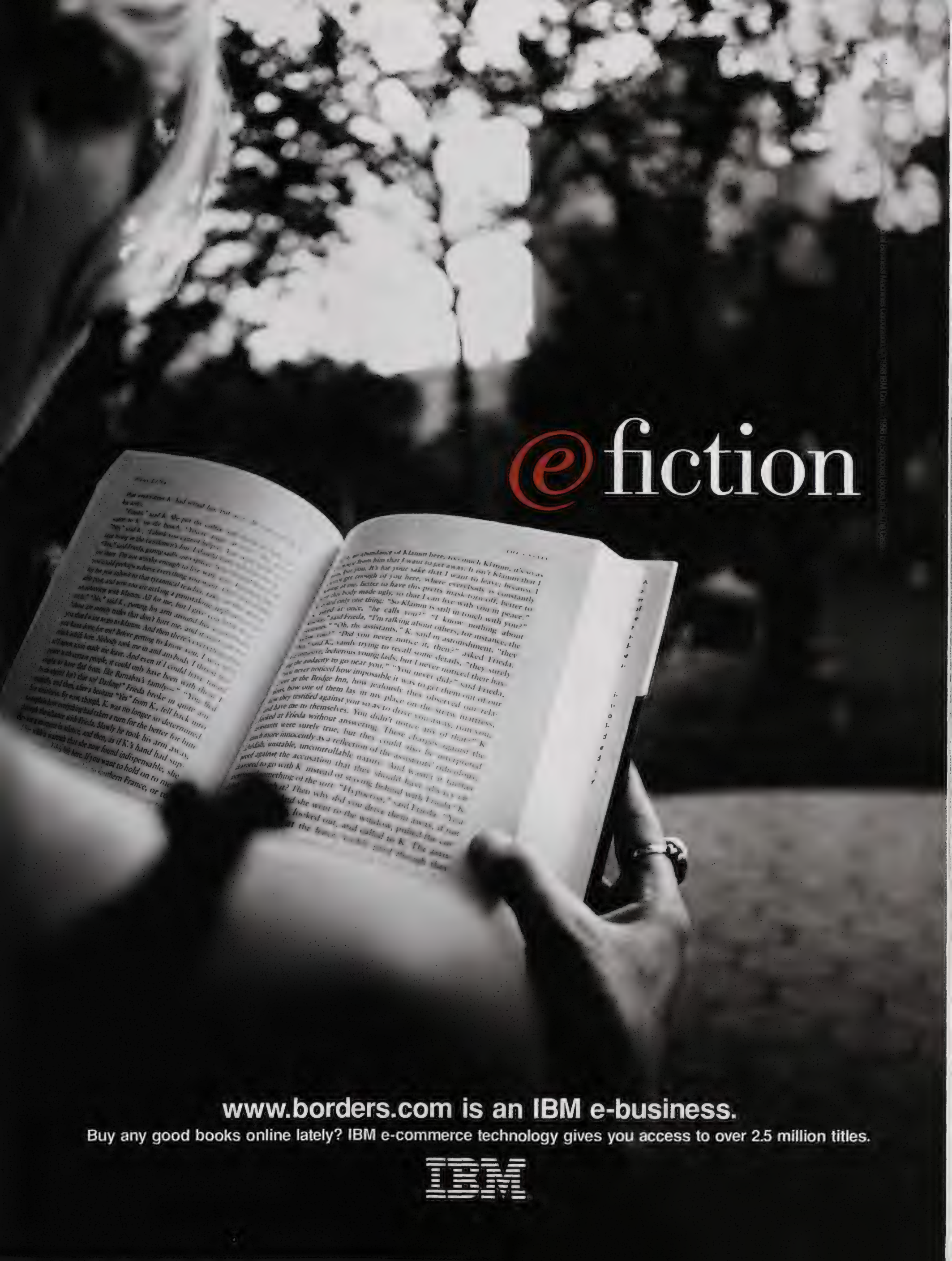
In early August, he returned and slipped past Grierson's men on his way to another strategic water hole, Rattlesnake Springs. Determined to get there first, Grierson and his men covered 65 miles in 21 hours. The buffalo soldiers outpaced their fast-moving Indian foes as Grierson led them on a parallel path, keeping to the far side of a mountain range to mask their presence from the enemy.

The 10th Cavalry won the race, arriving in the early hours of August 6. "We got there and at once took position for a fight," Flipper recalled. Grierson laid out an elaborate ambush, sending Captain Viele with companies C and G to occupy the walls of the valley above the springs. "No lights or fires were allowed and we had to eat cold suppers without coffee," Flipper continued. "If [the Apaches] once got in as far as the spring, we would have them surrounded and every vantage point occupied."

At 2 in the afternoon, the long, ragged band of Apaches rode into sight, ambling slowly through the bunchgrass and rocks and cactus on their tired horses. The Indians in the lead sensed that something was wrong and stopped their advance. When Viele saw them grow cautious, he gave orders to commence firing. The first of eight volleys of rifle fire erupted from the valley walls; Victorio's men scrambled for cover.

The master of the ambush had been ambushed himself—but the trap had been sprung too soon, and the long-range fire did little damage to the Indians. The Apaches, however, were desperate for water. Victorio rallied his men for an attack. Warriors on horseback surged across the valley floor, screaming their defiance and loosing shots at the dug-in buffalo soldiers. Just as the Apaches neared the springs, Capt. Louis H. Carpenter and Lt. Thaddeus Winfield Jones led companies H and B on a charge from one flank, crashing into the Apaches with carbines blazing. Victorio's men withdrew once again.

Over the next two hours, the firing died away to silence; Grierson knew better than to stage a pointless assault on Apaches holed up in the rocks. Then, as so often happened in battle, the unexpected occurred. At 4 o'clock a line of wagons rounded a mountain eight miles southeast


e fiction
www.borders.com is an IBM e-business.
Buy any good books online lately? IBM e-commerce technology gives you access to over 2.5 million titles.
IBM

of the water hole. A party of warriors emerged from the rocks and scampered onto their ponies, undoubtedly relieved to find an easy target beyond the reach of Grierson's men (and probably hoping to get some water as well).

Suddenly the Apaches pulled up short—for out of the wagons poured the buffalo soldiers of the 24th Infantry, the escort for this supply train for the 10th Cavalry. These foot soldiers unleashed a devastating fire across the valley floor. The Indians turned and fled; and within a few days they fell back to Mexico.

On October 14, 1880, Mexican troops trapped Victorio's badly reduced forces, killing the great chief in the final assault. But the victory had already been won. The Victorio War was perhaps the most difficult campaign ever waged against the Apaches. It was also one of the few Apache wars fought largely by regular troops, not Apache scouts enlisted by the Army—and those troops were largely buffalo soldiers. They out-marched, out-fought and out-generaled a foe often considered to be the hardest marching, hardest fighting, most skillful enemy in frontier history.

Over the remaining years of the frontier era, the buffalo soldiers stayed at the center of events. The 10th Cavalry, for example, played a significant role in the last major act of Indian warfare in the Southwest: the Geronimo Campaign of 1885-86. The 9th Cavalry and the 25th Infantry also joined operations against the Sioux in 1890-91.

Lieutenant Flipper, however, endured a sad sequel to the Victorio War. As the only African-American line officer in the 10th, he remained the object of special hatred by many of his fellow officers. As quartermaster at Fort Davis, Texas, in July 1881 he discovered commissary money was missing from his trunk. On December 8, 1881, a court-martial found Flipper innocent of embezzling the funds—but guilty of "conduct unbecoming an officer." (Historians believe the court-martial occurred as a result of Flipper's friendship, albeit platonic, with a white woman.) Expelled from the military, he worked as a civil engineer, and as a translator, but he failed in his unceasing efforts to clear his name. Finally, on December 13, 1976, after long campaigning by Flipper's descendants and defenders, the Army's board of corrections exonerated him, issuing an honorable discharge 36 years after his death.

As the buffalo soldiers watched the promising age of Reconstruction—the nation's first civil rights era—come crashing down into the rubble of segregation, they saw themselves as the last bastion of public service for African-Americans. "They are possessed of the notion," wrote one chaplain, "that the colored people of the whole country are more or less affected by their conduct in the Army."

In the Spanish-American War and in the Philippine insurrections, these regiments added pages to their thick record of accomplishments. Ironically, these units were largely kept out of combat in the two world wars, although African-American volunteers and draftees fought courageously in France, Italy and Germany. Yet even those who saw combat suffered severe prejudice; only a handful received awards for valor. On January 13, 1997, President Bill Clinton took a small step to rectify this injustice by awarding the Medal of Honor to seven African-Americans who had served in World War II.

The regiment came to grips with the leader who would prove to be its deadliest enemy: Victorio.

In recent years, interest in the buffalo soldiers has flourished. They have been commemorated with a postage stamp, historical-reenactment groups and a 1997 cable television movie. Much of the new recognition stems from the efforts of one black officer who strongly identifies with his 19th-century predecessors. In 1982 he arrived at Fort Leavenworth, Kansas (birthplace of the 10th Cavalry), and was dismayed to find not one memorial to the buffalo soldiers' "incredible contribution to the American West." That officer was Colin Powell. In 1992, he returned to Fort Leavenworth—this time as chairman of the Joint Chiefs of Staff—to dedicate a monument by sculptor Eddie Dixon. It was a fitting tribute from a military that hesitated to accept African-Americans, learned to depend on them, and finally—under the leadership of a modern black soldier—has come to honor their memory.

T. J. Stiles, who has written several books on American history, is working on a biography of Jesse James, to be published by Alfred A. Knopf. Arthur Shilstone has illustrated numerous SMITHSONIAN *stories.*

In 1880, Apache war chief Victorio and his men, seeking water at Rattlesnake Springs in Texas, found the buffalo soldiers instead.

While Dodge Intrepid ES may turn a pretty face to the world, a closer look reveals an obvious depth of character. Its aluminum powerplant, for example, generates 225 horsepower from a mere 3.2 liters. That same efficiency of design translates to efficient operation as well. EPA estimated fuel economy numbers: 18 m.p.g. city, 28 m.p.g. highway.

While Intrepid ES' shape is aerodynamically trim, its interior is expansive. An AutoStick® transmission accommodates automatic and manual shifting. A wide range of other standard and optional features will accommodate the most discriminating driver.

Dodge Intrepid. This changes everything. Again.

It's intelli

Always use seat belts. Remember a backseat is the safest place for children.

Intrepid The New Dodge

1-800-4-A-DODGE or www.4adodge.com

gent, too.

LET'S ROOT FOR THE COOT

EARLY IN A YEAR OF STUDY IN a marsh, whenever the drab colors, low armor-plated brow and idiotic bobbing motion appeared in my binoculars, I had the nearly universal reaction: *Just a coot.* I swung the binoculars onward in search of something worthwhile.

This feisty waterbird is very common. That's part of the problem.

The disrepute of the coot is entrenched in our language. "They are stupid and fly slowly, and can hardly be classed as game birds," according to *Webster's* second edition, published in 1959. In its first sense, "coot" refers narrowly to the genus *Fulica*, the coot proper; in its second sense, to surf ducks or scoters; and in its third, to "stupid fellow; gull; simpleton; as a silly *coot.*"

The American coot is also known as the mud hen, mud coot, mud duck, baldface, blue peter, crow-bill, crow-duck, pond crow, sea crow, flusterer, shuffler and pull-doo (which comes from the French *poule d'eau*, or "chicken of the waters"), among others names. None of these aliases radiates nobility. None is a graceful, shining name like "swan," nor a clean, trim term like "tern."

In a hidden nest, two coot chicks have hatched, another (broken shell) will hatch within the hour, and one (pip hole) in 24 hours.

In my own disregard for the coot, I reached adulthood believing it was some kind of duck. The coot in fact is a rail (SMITHSONIAN, August 1988). It has the big, lobed feet, short wings and reluctance to fly that mostly characterizes the family Rallidae. Where other rails are seemingly shy, mysterious birds of the reeds, the coot goes about life openly. The old rail specialty, that impossible elongation of self to squeeze—like a feathered Houdini—between contiguous reed stems, is a talent lost to the coot. The coot is not "thin as a rail." Its chunky build and the white frontal shield on its forehead make it the ironclad of the family, a *Monitor* or *Merrimack* of the Rallidae. If, above the waterline, the coot is the most ducklike of the rails in its shape, below water it retains those unwebbed rail feet. Where a duck glides smoothly across the surface, like a target in an arcade, the coot labors along, head pumping foolishly. It is the effort required in swimming weblessly, perhaps, that sets the head to nodding.

On my first duck hunt as a boy, I murdered a coot. The deed resurfaces only now as I write—recovered memory!—but it is coming clear: we had no luck with edible waterfowl, so my teenage guide (a future presi-

BY KENNETH BROWER ✒ PHOTOGRAPHS BY MICHAEL SEWELL

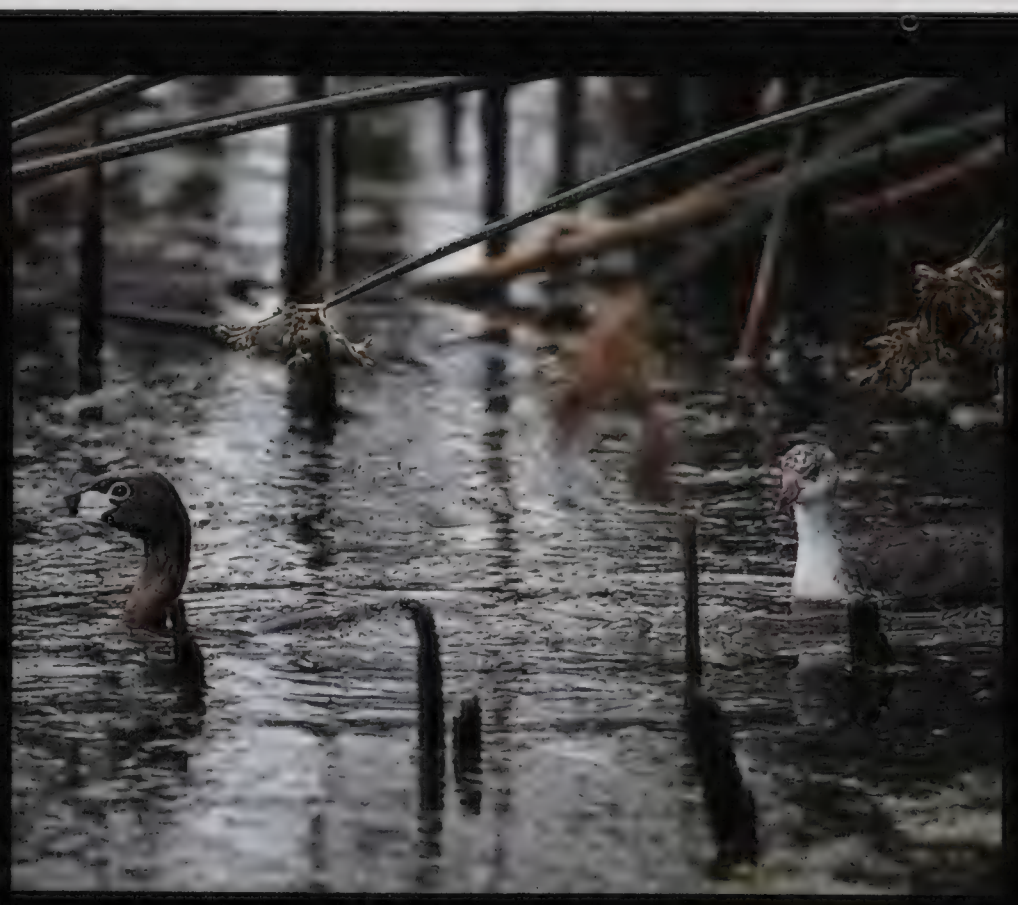
dent of the Sierra Club, strangely enough) instructed me to kill a coot. There was never an intention to eat the bird, or even to retrieve its corpse. The murder has rested very lightly on my conscience. Coots don't seem to count. Until this moment, I had completely forgotten the incident.

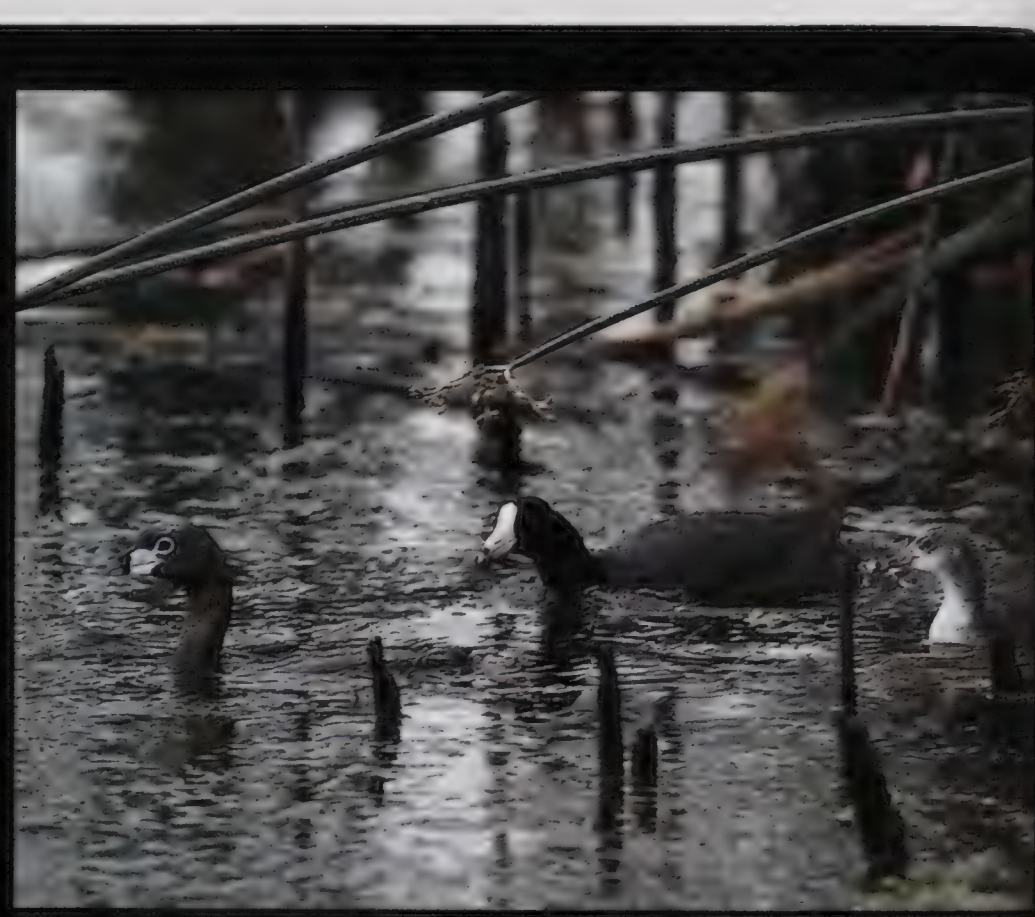
Where the startled mallard, from a dead standstill on the water, springs vertically and athletically skyward, the startled coot, for its part, patters desperately away over the surface in a frenzy—an effort that seldom gets it airborne and has earned the bird the nickname "splatterer." The launch of a mallard, or pintail or shoveler—that vertical takeoff with a bright explosion of droplets—can blur the viewer's vision with sudden, inexplicable tears. The interminable comic takeoff of a coot wins at most a crooked smile. The iridescent green in the drake mallard's head, and the blue in its wings, are magical, shifting, "structural" colors, produced not by pigments but by reflective barbules on the feathers, which allow the hues to change continually with the angle of reflection. The industrial slate-gray of the coot is unvarying. It stays the same dull color at any angle or time of day. Coot-gray is a much darker shade of the color the Navy uses to paint its ships. A bunch of coots riding at anchor has all the poetry and romance of a mothballed fleet of minesweepers.

The autumn cry of the loon says Far North. (In summer, on the breeding grounds, the loon's lunatic laughter hints at the vast solitudes that drove it crazy.) The honking of geese has the sweep of Arctic tundra in it, and the cycle of seasons, and the miracle of migration, and some ineffable poignancy at the very heart of life. The call of the coot from among the cattails, muttering and chortling to itself like a drunk, sings of marsh muck and the slimy vegetation that the bird brings up to eat.

Where other rails are seldom seen, the coot is seen too much. The curse of the coot is its commonness. The truth of this was brought home to me by the common moorhen that lived in our Sonoma County marsh. The common moorhen, or common gallinule, is in fact very uncommon throughout most of its range. The "uncommon" moorhen is a close cousin of the coot. It is somewhat slimmer, with a red beak tipped with yellow and a frontal shield of a bright, subtropical red, but its general aspect is very similar. On rare occasions when the moorhen or its mate, and later their three chicks, ventured out of the reeds, I would freeze and watch with bated breath. It was not that way with coots. There has been an inflation of coots in our wetlands, and a subsequent devaluation. If there is a "weed" of waterfowl, it's the coot.

Or so I always thought. Then one day in the marsh, with the spring sun behind me and a coot ahead, I caught





From left to right: A pied-billed grebe has surfaced in front of a 4-week-old coot chick; the attending adult coot, a male, charges in to protect its offspring.

P. 99 WENDY SHATTIL/BOB ROZINSKI

the bird in profile in my ten-power field glasses. For the first time I realized the brilliance of the blood-red eye. Coot plumage may be drab, but the bird's eye holds a warlike luminosity that no color plate will ever capture. I began to rethink coots. I was forced to reconsider, first, this matter of the commonness of coots. To complain that the coot is everywhere is an admission that the bird is extraordinarily successful.

added several more. The coot is endlessly voluble. Like its upstairs neighbor, the marsh wren, which says the same sort of thing, beautifully, over and over again, the coot is full of cackles, croaks, natterings, long interior monologues and little polyglot exclamations of surprise, contentment and alarm. It is the mockingbird of the marsh. If the red-winged blackbird is the voice of the marsh canopy—bobbing on its perch on the

quick U-turn. Dropping its chin to the water and raising its tail, it will ruffle itself out to look as big as possible, and victoriously flash the white V on its backside.

Coots are belligerent, territorial, quick-tempered birds. Nothing irritates a coot like another coot—most coot warfare is internecine—yet the bird will attack nearly anything else that strays into its range, particularly when its chicks are present. On the

The adult coot pecks and claws at the intruder, trying to grasp the grebe with its bill so it can rake the victim with its claws; with the grebe driven off, all is tranquil once again.

Wherein lies the success of the coot? The bird's adaptations to wetland life are not immediately obvious. They don't jump out, like the webbed feet, catapultic takeoff and fast flight of the duck.

At first I thought the coot's success might be in its big vocabulary, its powers of communication. Roger Tory Peterson's *A Field Guide to Western Birds* transcribes coot talk as "*kuk-kuk-kuk-kuk-kuk-kuk; kakakakakakakakaka*, etc." The key word is "etc."—and Peterson could safely have

tip of a cattail, flashing its red epaulets and singing its liquid *o-ka-lay-onk*—then the marsh wren is the voice of the mid-story, and the coot, the guttural voice of the roots.

When the spoken word is not enough, the coot makes semaphores of various parts of itself, employing a repertoire of at least a dozen displays. My favorite is the maneuver that might be called "mooning the enemy." Following a furious, water-walking chase after a rival, a coot will reverse the last of its momentum in a

marsh I watched coots chase off cinnamon teal, cormorants, pied-billed grebes, gadwalls. The coot is dominant over its cousin, the common moorhen. Chasing ruddy ducks across the surface, a coot will continue the pursuit underwater, diving down through the surface ring the escaping ruddy has made. Coots have no use for muskrats. When those giant water rodents submerge to escape, the birds will pursue on the surface, roiling the water with their feet—the mud hen depth charge.

A flock of coots splatter the water into froth as the birds struggle to get airborne. Weak fliers, they normally migrate at night so that raptors will not have easy pickings.

Once I saw a caspian tern plunge in near some cattails, then emerge with a silvery fish in its beak and a coot instantaneously on its tail. "Silly coot" now seems a foolish phrase to me. "Mean as a coot" might be more on the mark. Perhaps the success of the coot is because of its warrior spirit.

It was coot combat that first caught the eye of photographer Michael Sewell, my colleague in the marsh. Coots fight like kangaroos, leaning back in the water and striking each other with their oversize feet. They specialize in dirty tactics, like holding and hitting. The basic coot combination—the old mud hen one-two-three—is to grip the opponent with one foot and slap him silly with the free claw, slip the shiv of the beak in, then attempt to force him over onto his back and hold him underwater. A coot fight is spectacular—a small, local hurricane of beating wings and white water—and Sewell's telephoto lens provided him a ringside seat. "These coots!" he complained to me, lamenting the amount of film he was burning on them.

One morning, after donning my chest-waders, I helped Sewell push his aluminum skiff around the marsh. The boat, covered in camouflage netting, served as a gunship for his camera, which was mounted on a quick-swiveling tripod at the stern. His autofocus 500 mm f/4 lens was designed to freeze fast-moving objects in flight, and the photographer, in camouflage garb himself, wore three different duck calls around his neck. He went loaded for duck, in other words. Yet everywhere coots were what we encountered.

In nearly every stand of cattails, we found at least one coot nest. These structures, volcano-shaped cups woven of reeds, are often called floating nests, but this is misleading, as each mound is firmly anchored, interwoven at waterline with the upright culms of a number of living cattails or bulrushes. In a single breeding season, a pair of coots will build as many as nine nests, but the female lays eggs in only one, using the other "dummy" nests for displaying and mating.

Setting the heel of his hand in one coot nest, Sewell pushed down hard, then commented on the surprising sturdiness. I followed suit. The nest was sturdy indeed. Horton the elephant could have incubated his egg on it. I asked Sewell how he explained the remarkable success of the coot. He gestured immediately at the nest between us. Whereas ducks, for the most part, must nest on land, he pointed out, coots nest out in the relative safety of the cattails.

Perhaps the nest is the answer, indeed. Perhaps the success of the

TAKE PICTURES. FURTHER.™

This kick went clear across the country.

Try KODAK PhotoNet online and your pictures will go a long way, too.

Just present this coupon when ordering KODAK Premium Processing—and try KODAK PhotoNet online or KODAK Picture Disk, **FREE.** Take your pick:

KODAK PhotoNet online

- E-mail your pictures
- Share your pictures with family and friends
- Order reprints and picture gifts online

or

KODAK Picture Disk

- View pictures on screen
- Add pictures to documents

FREE KODAK PhotoNet online or KODAK Picture Disk when you order KODAK Premium Processing

Limited Time Offer! Expires 1/31/99

To Redeem: Insert this coupon and your original color roll of 35mm or APS film into film developing envelope at your favorite retailer offering KODAK Premium Processing. Check "Coupon Enclosed" box, make your KODAK Premium Processing print selection, and write "FREE KODAK Picture Disk" or "FREE KODAK PHOTONET online" in special instructions area on envelope. This coupon can not be redeemed with any other offer, one coupon per order. **KODAK Premium Processing is required with order.** C-41 process only. Kodak is a trademark of Eastman Kodak Company. Service time for KODAK Picture Disk and KODAK PHOTONET online is 2 days for 35mm and ¯ days for APS film.

For more information on KODAK PHOTONET online, call 1-888-299-95¯6 or visit the web site at **www.kodak.photonet.com.** For more information on KODAK Picture Disk, call 1-800-433-2398

Kodak PhotoNet online

Kodak Picture Disk

FREE

Code: ¯21

Kodak PREMIUM PROCESSING

coot is architectural. The female coot does most of the building, with materials brought in by the male. There is a classic, almost Grecian sensibility to the coot eye for design. The "caldera" atop the volcano of the nest is a shallow, perfect basin. Coots seem to take great care to get the inner curvature just right, as astronomers do in engineering the mirrors of their reflecting telescopes.

The pied-billed grebes of our marsh build a similar nest.Working with smaller fragments of reed, grebes fashion a much wider lip around the basin, cutting down on chick space inside. Grebe nests are always wet. The wider lip may have some advantage—better chick retention, maybe—but it is hard to imagine any virtue to a damp nest. After all, water conducts heat away 25 times faster than air does. Yet, the grebe eggs I found were always warm, as if nearly continuous brooding kept them that way. Pied-billed grebes build their nests using rotting vegetation, which may supply some heat, just as happens in a compost pile.

The pied-billed grebe lays an elliptical, blue-tinted white egg, but this immaculate creation soon becomes "nest-stained," darkening to a tannic and dirty buff-yellow, sometimes even to a harvest-moon red. None of these Easter-egg effects for the coot. The weave of a coot nest drains nicely. The basin is dry again soon after rain, so the eggs are not stained. Coot eggs—from 5 to 12 per nest, laid on consecutive days—remain at hatching the same speckled, pale-buff wonders they were when laid.

Coots do not begin incubating (male and female take turns) until the fourth or fifth egg is laid. Other coots, as well as birds of other species (known as brood parasites), sneak in and lay their own eggs among the coot's—a kind of subterfuge to which marsh ducks are particularly vulnerable—yet the coot, somehow, almost always detects the foreign eggs and buries them down deep in the nest. The ruddy duck, which was the commonest resident duck in our marsh, is one of the worst of brood parasites, yet it ignores the nests of coots. Ruddies, of course, are continually ducking underwater to avoid the mud hen's territorial wrath. It may be that the solemn, introverted moments required for the trespasser to lay an egg are hard to find. But something other than nest defense seems to be at play. When chicken eggs are inserted experimentally into coot nests, the eggs always fail. Perhaps the success of the coot is less in architecture than in nest protocols. Perhaps the success of the coot lies in its skeptical eye.

The coot would thrive on a moon of Saturn, probably, if that satellite had a sea to upend in and a little algae.

The eye ring is deep red. Chicks peck at the marks on the end of the bill for food.

Michael Sewell stood at the nest, reflecting on the conundrum of the coot. He told me a story from his youth. At the end of a fruitless duck hunt with his father, he and the old man had turned their guns on coots. "We shot the limit, which was 21. In those days, the duck limit was what? Three? We brought them home and cleaned them. It was an experiment. Jeez, they smelled just awful, like an open sewer. They're bottom feeders. I think one made it as far as the pan. My dad was so stubborn. But in the end they all got thrown out."

Sewell's coot experience—distaste early, a grudging admiration later—paralleled my own. His implication that the success of the coot might lie in its awful flavor had occurred to me, too. As edible waterfowl are hunted out, the niche for the inedible figures to expand.

Perhaps the success of this unappetizing bird is in its appetite. The mud hen is a kind of vegetarian pond vulture. It will eat tadpoles, insects, crayfish and snails when it finds them, but it subsists mainly on surface algae and—in spring—moldering plant matter from the bottom. The coot would thrive on a moon of Saturn, probably, if that satellite had a sea to upend in and some sort of blue-green algae to dabble off the bottom. Maybe the coot's secret is its cast-iron stomach.

The spring of 1998, our year in the marsh, was an El Niño spring, the coolest and rainiest for many years. In that gray weather, the warm eggs of coots, when my cold hands found them, felt positively hot. I would heft each egg briefly, to steal a little of its warmth, then set it carefully down with the others. Sometimes I would roll an egg or two against my wind-chilled cheek. On a bleak day in the cattails, the cheering effect of egg against cheek lasted long after the physical warmth was gone. One afternoon the egg on my cheek cheeped at me. I set it back apologetically. The egg beside it cheeped, too, and from a small hole in that one, a tiny, red, dark-tipped beak protruded. I peered in. The cootling's black prenatal eye gazed back.

What emerges from the coot egg is the biggest surprise of the marsh. A coot, for all its grayness at maturity,

WITHOUT A CENTURY OF TRUCK EXPERIENCE,

A LUXURY SUV

IS JUST A

LUXURY V.

The new ENVOY

©1998 GM Corp. All rights reserved.

A sport utility is, by definition, a truck. Since 1902, GMC has provided trucks and nothing but trucks for people whose jobs and lives depend on them. And while the new Envoy™ has comfort and technology that rival the most luxurious of vehicles, it is also built with the belief that the greatest luxury an SUV can have is capability. Call us at 1.888.ENVOY.4.U or visit www.envoy.gmc.com.

GMC.

Do one thing. Do it well.

pips out as gaudy and polychromatic as any tropical parrot. The hatchling has a bald, pink-purple pate, above which levitates a mist of nearly invisible down. The naked skin of the brow, in a semicircle above either orbit, is painted an iridescent lavender-purple. From the base of the red beak, stubby orange feathers spread backward across the face. The chick wears a frazzled cape of sparse, lone, filamentous orange or yellow feathers over its dark underdown. The parable of the Ugly Duckling is turned upside down in coots.

It does not seem to make survival sense. The hatchling stage is the most vulnerable time of any bird's life. Where the young of most marsh birds are cryptically colored, the coot chick waves the flag of itself. The colors seem to be in competition for the attention of the parents. Canadian researchers, on clipping away the orange plumage of half the chicks in a number of broods, have discovered that the parents will ignore the dark, shorn cootlings and feed only the brightly colored ones. When all the chicks are shorn, the parents feed everyone equally.

Gangs of young coots, four or five strong, have learned to mug ducks and pirate food from them.

Baby coots seem to venture out unsupervised at a very young age. The biggest stretch of open water in our marsh lay along the northern levy, and I often saw the motes of solitary chicks disappear in the distance there, boldly exploring the two-inch swells. Good parenting, I think, is not an explanation for the success of the coot.

Where other rail mothers perform distraction displays, the coot does not. The mother gadwalls of our marsh did a fine broken-wing act to protect their young. A whole epidemic of broken wings would spread among the marsh's black-necked stilts whenever we approached their nesting bar. Crying piteously, thrashing wings, the stilts would ventilate the marsh with their melodramatic acting. The coots, for their part, would just swim away, clucking fretfully and leaving their young to fend for themselves. Coot parents do work hard on the bottom, bringing up the aquatic invertebrates that baby coots eat. But coots seem incapable of the tight discipline a duck hen maintains over her flotilla of ducklings. Occasionally, in a half-hearted and ineffectual way, a coot will try to herd its young. The cootlings pay little attention and continue to follow their impulses.

It may be, of course, that delinquency is good for coots. Cootlings soon become marshwise. By the time they are juveniles, gangs of young coots, four or five strong, will have learned to mug ducks and pirate food from them. Perhaps the success of the coot is in bad parenting.

When danger presents, wayward cootlings generally take refuge in the nearest cattails or bulrushes. Coot chicks have a magical way of vanishing in the smallest, sparsest stand of reeds. The culms of cattails are green and vertical; the chicks are dark and squat, yet somehow the little birds dematerialize there. Occasionally I did succeed in wading up to a baby coot. The chick would try diving to escape me. The head and shoulders dove beautifully, but the rump refused to follow. Coot survival strategy at the beginning of life seems heavily weighted in favor of buoyancy. Diving prowess can wait till later. Flailing at the surface, the chick seemed to imagine it was plunging down into the cool, abysmal, eight-foot depths of the marsh, swimming an escape route through murky forests of pondweed. In truth it was going nowhere. When

Left: Coots stake out their breeding territories by "mooning" interlopers. Above: During a chase, the birds beat their wings as they half fly, half run across the water.

I scooped the chick up, it would attempt to swim off my hand once or twice, then resign itself and regard me calmly with a dark, nictitating eye.

I would admire its many colors. I would delicately pat the monklike purple pate under its saintly nimbus of down. I would test the sharpness of the claws on the huge feet. The coot is one of those creatures that grows into its feet. The toes, disproportionate in adult coots, are even more so in babies. I would finger the meaty lobes that scalloped the toes. A coot divides its time between water, reeds and mud, and the lobes help it to handle all three surfaces. This tridexterousness, maybe, underlies the coot's success. The lobes also serve as radiators, quickly cooling the bird down when it immerses its feet. Coots handle hot weather extraordinarily well. Perhaps their success is in thermoregulation.

When I finally had my fill of speculation, I would give the chick a sniff—it smelled good, like any baby does—then set it down on the water again.

Humans are amused by imprinting in waterfowl. We laugh at the deluded ducklings that follow the family spaniel around, the chicks having seen it first of all things in creation. We forget how easily we can be reduced to irrational behavior by a mere bird. It is possible for a human to fall in love with an infant marsh bird—and with the whole species it represents—simply by playing with the feet. Waterfowl, for all their programmability, are not imprintable until after hatching. A human can be imprinted in the egg stage, simply by rolling that warm, smooth capsule of life against his cheek.

My heart, once hardened against the coot, softened. I became a cooter, or a cootie—or whatever the correct term is for an advocate of coots. The coot is garrulous, wordy, warlike, an adept builder, opportunistic and adaptable, by turns a good parent and bad; an animal whose young must grow into their feet. It was not difficult at all to empathize with a creature like that.

To wade into coot country is to lose yourself in time. With a single step into our California marsh, the cattails closed behind and above, and there was nothing else to see but reeds, nothing to hear but the muttering of coots, nothing to smell but the clean yet faintly mucky fragrance of marsh. No feature of this close green universe, not nest of coot or grebe, nor the spiky inflorescence at the tip of the bulrush, nor the V of geese glimpsed through a bulrush screen, was any different from what a Miwok Indian would have seen, poling his reed canoe through this same spot centuries before Columbus.

To wade into cootland is to lose yourself in place. Marshes are much the same the world over. Nothing in our California marsh would have surprised a Bolivian Indian, poling her reed canoe through the reeds along the shores of Titicaca, or a marsh Arab paddling his *mashhuf* through

the reed beds of southern Iraq. In reading up on my marsh brethren in various parts of the world, I learned that the marsh Arabs—the Madan—know coots, white pelicans and otter nearly identical to the species in our marsh. Marsh Arabs build their houses on artificial islands, which they construct by heaping reeds inside a reed fence and tamping them down. I knew where I had seen this style of architecture before. The Madan, I would bet, were inspired by the lowly mud hen.

The reeds of our marsh grew thickest at the southeastern end. I imagined myself exploring an equivalent district of the Madan marshland. Sometimes, trying my best to imitate a rail and slipping into the depths of the reeds, I felt just like Ali the Abominable. Ali led a ninth-century slave rebellion against the caliph of Baghdad, fighting a guerrilla war, hiding in southern Iraq's 6,000 square miles of marsh. For me, our one-seventh of a square mile became a refuge from deadlines and editors. The moment the cattails and tules closed around, I would find myself smiling a small, satisfied, Ali-esque smile. The caliph would never find me here.

The Arabs were late arrivals in the marshes. Before them the marshland was inhabited, in succession, by the Sumerians, Assyrians and Babylonians, who established their great Mesopotamian civilizations in southern Iraq beginning sometime around 3000 B.C. Marsh imagery dominates Mesopotamian legend. We know because writing first emerged there and a cache of almost half a million cuneiform tablets tell us what the Mesopotamians thought. It was from these people that the Hebrews borrowed their story of the Deluge. The Hebrews must have assumed that the Mesopotamians, a seasonally flooded people, should know about high water, and in the Old Testament, writing up the Flood, the Bible's authors had the good sense to hew closely to the original report. Noah is named Utanapishtim in the ancient version. "Reed hut, reed hut," the

Aided by lobes on their toes, coots can swim, but not as well as ducks. The color of the tarsus, the bone just above the toes, is a clue to a bird's age. This one is about 3.

I knew where I had seen this style before. The Madan had been inspired by the lowly mud hen.

friendly god Enki whispers, outside Utanapishtim's wall. "Tear down this house and build a ship." Eventually, the ark comes to rest on Mount Nisir, not Ararat. Utanapishtim first releases a dove, which finds no land and returns to the boat. He then releases a swallow, with no better luck. He releases a raven, which never returns. The coot, a poor flier, is never mentioned.

I followed the legends back even farther, in search of the coot, to the very beginning of the world. One creation myth describes how the supreme god Marduk mounted his storm-chariot, armed himself with flood-storm and lightning, and routed the disorderly dragons and serpents of the army of Chaos. To create the earth another story tells me, Marduk built a reed raft "on the surface of the waters."

Here my eyes widened. I commenced briskly tapping my teeth with my pencil. *Marduk,* I thought. In early Babylonian times, before the people raised the tower of Babel and confounded human tongues, could "Marduk" and "mud duck" have been one in the same? I guessed not. *Marduk, marsh duck, mud duck, Miwok?* I babbled to myself. No, nice try, but probably not.

Still, I found the ancient creation stories very satisfactory and reasonable. A reed raft on the surface of the waters is a brilliant solution and a new aphorism. Marduk, the Creator, is as "clever as a coot."

Kenneth Brower has written 11 books and coauthored or edited another 13. He lives in Oakland, California. Michael Sewell's photographs have been widely published in the United States and abroad.

A charitable gift whose greatest benefit lies in its potential.

As America's #1 grantmaking organization,* the Charitable Gift Fund invites you to join us in making your contributions larger, easier to make and more valuable. That's because we invest your contributions, allowing your charitable gifts to potentially grow over time. Of course, you'll receive the traditional tax, capital gains and estate benefits of charitable giving. At the same time, we assume all of the administrative duties, so you may concentrate on the causes you care about most.

More than 50,000 charities have already received more than $700 million from our donors through the Charitable Gift Fund. Now we invite you to join our donors in discovering a more powerful way to give.

Call us today or visit our website to find out more about how the Charitable Gift Fund is ***bringing more to giving.***

CHARITABLE *gift* FUND

800-682-4438 www.charitable-gift.org

*Among public charities, *Chronicle of Philanthropy,* 1996 ranking.

Ever made a rational decision
with all your heart?
Meet the most personal of personal computers: The very latest Compaq Armada notebooks. They're

anything a desktop can—COMPAQ anywhere you want. Notebooks that redefine the

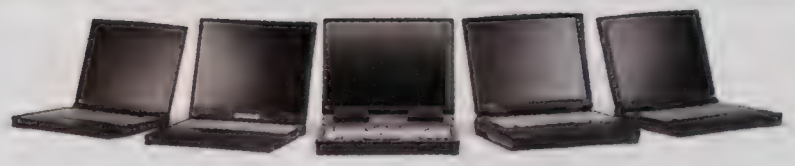
the Armada notebook that's perfect for you) call 1-800-AT-COMPAQ. Or visit

Better answers.℠

notebooks that marry exceptional mobility with uncompromising performance. Notebooks that do

concept of value. To locate a reseller (and

www.compaq.com/products/portables/.



The New Compaq Armada.

intel inside

pentium® II

©1998 Compaq Computer Corporation. All rights reserved. Compaq and the Compaq logo are registered trademarks of Compaq Computer Corporation. Intel and the Intel Inside logo are registered trademarks of Intel Corporation

In a time exposure, cosmic sightseers move from telescope to telescope at a star party at the Smithsonian's Whipple Observatory.

In Arizona, it's an all-night party for the stars

BY DAVID DEVOSS

IT WAS THE PERFECT EVENING FOR A STAR PARTY. THE night was dark, the sky clear, the air scented with cedar. A cold front had passed through earlier in the day, cleansing the atmosphere. Stars that normally would have twinkled timidly instead announced their presence with laserlike intensity.

The hosts were amateur astronomers invited to the Grand Canyon by the National Park Service to conduct a series of twilight talks followed by eight nights of stargazing. The guests

PHOTOGRAPHS BY ERIC SANDER

The newlyweds had planned to spend romantic nights looking at the sky while waiting for Saturn to rise.

were vacationing tourists. Now, after a sunset inspiring muted awe, the evening stars had arrived and both groups were clustered around 30 telescopes arrayed along the canyon rim at an elevation of 7,000 feet.

No telescope was needed to see Vega, Antares and Spica, the great summer stars that blaze in the constellations Lyra, Scorpius and Virgo. The astronomers began taking the novice stargazers deeper into space to explore distant galaxies, gaseous nebulae and globular star clusters that glow like golf balls dipped in glitter.

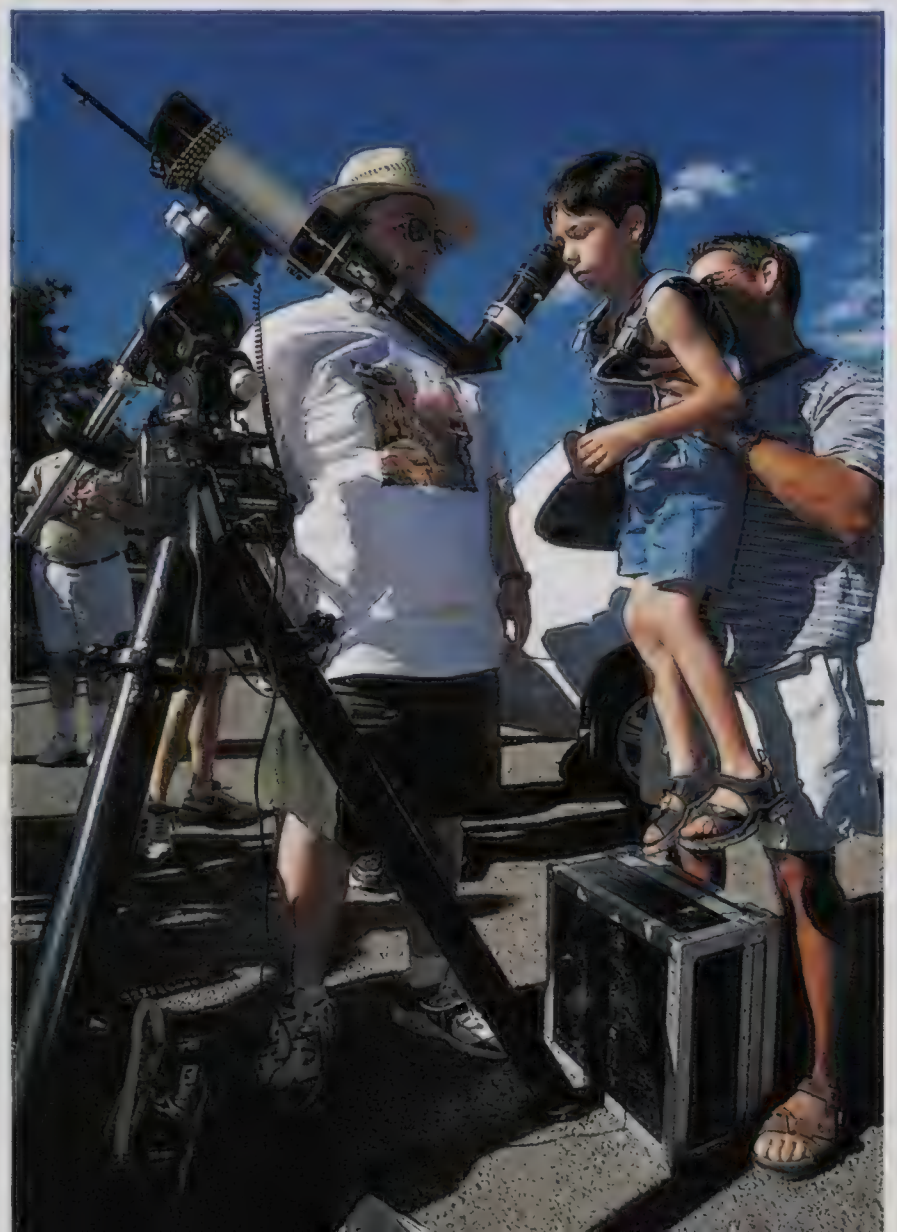
"I go out 50 million light-years [one light-year equals six trillion miles] with this baby," said Richard Taylor, a retired hydraulic engineer from Bakersfield, California, as he caressed his telescope. "I got aperture fever and designed a scope larger than I had intended, one with an 18-inch [diameter] mirror," Taylor laughed. "Things can get out of hand when you're in a fraternity where people take pride in their equipment."

Scampering up a ladder erected beside the scope, Taylor looked through the eyepiece and started searching for "faint fuzzies." He quickly found such an object, one first catalogued by the 18th-century Parisian astronomer Charles Messier. "That's M51, the Whirlpool Galaxy," he said, stepping down off the ladder so a student from Italy could ascend for a look. "It's 35 million light-years away, but tonight you can see knots of individual stars in the galaxy's spiral arms."

Arizona is rapidly becoming the first choice for astronomical tourists, people who travel specifically to see the wonders of the heavens blazing out of clear, dark skies. They come from the bright lights of cities; from places where clouds or smoke dims the view; from sea level, the abyssal plains of a turbulent ocean of air. Professional astronomers discovered Arizona decades ago, and now the state is speckled with the glass of giant telescopes. Those who simply want to marvel are following the pros.

On the rim of the Grand Canyon, lines of people were waiting at each telescope for just such voyages of discovery. Some were studying the Ring Nebula, an expanding shell of gas that was ejected 20,000 years ago in the last gasp of a dying star. Others, peering through the spout of the "teapot" of Sagittarius, looked at the dark globules inside of which stars are forming in the Lagoon Nebula. Each viewer was traveling along paths of light extending back millions of years into the past. Light from the Andromeda Galaxy, for instance, takes 2.2 million years to reach Earth, which means that when you look at that

Above: As the sky darkens, amateur astronomer Dean Ketelsen begins a star party discussion at the Grand Canyon. Projected on the screen behind Ketelsen is Comet Hyakutake.



Below left: In the daytime, visitors can view the surface of the sun through a telescope equipped with special filters. Right: Richard Taylor adjusts the top of his homemade 18-inch telescope.

galaxy, you are seeing it as it appeared 2.2 million years ago.

The enormousness of space can be mind-boggling, especially for children raised beneath the canopy of reflected city light. "What's that big cloud?" one girl asked, as she waited in line for her turn at a telescope. "That's the Milky Way, the galaxy we live in," smiled Stan Spoors, a retired criminal investigator turned amateur astronomer. "It's like a big pinwheel 100,000 light-years across and 1,000 light-years thick, filled with 200 billion stars."

"Cool," she said.

The Grand Canyon Star Party is the creation of Dean Ketelsen, a Tucson optics engineer, who brought his bride and their telescope to the canyon some years back for what turned out to be a very public honeymoon. The newlyweds had planned to spend romantic nights looking at the sky while waiting for Saturn to rise in the east. When they set up oversize binoculars on the canyon rim, however, they were always surrounded by curious campers who also wanted a peek at the heavenly bodies. "Actually," laughs Ketelsen, "we had such a good time introducing families to the night sky that we decided to make it an annual event."

Ketelsen's weeklong star party each June attracts amateur astronomers from throughout the country who arrive at the canyon bearing tents, telescopes and enough enthusiasm to last from dusk until dawn. The amateurs leave day jobs and come at their own expense. Take Lynette Kogler. She's an evidence technician with the Phoenix Police Department who relaxes by looking through a special filter at fiery flamelike prominences on the surface of the sun. "I could stay home and look at the sun by myself, but it's more fun to be here where I can turn to other people and say, 'Hey, look at this! It's really neat.'"

Astronomy on an amateur level is far from a solitary pursuit. Indeed, "backyard astronomers" who join local associations quickly find themselves on the "A List" for star parties that are as different from each other as Pegasus, the winged horse, is from Andromeda, the chained princess. The Riverside Telescope Makers Conference attracts 2,000 people with technical skills to Big Bear, California, over Memorial Day weekend. People who like a camping option often choose the Texas Star Party, which takes place in the spring in the Davis Mountains north of the Big Bend country. Up for some stiff competition? Then participate in a Messier Marathon. One of the most popular is held outside Phoenix in March. The goal is to locate and identify in a single night all 110 deep-space objects catalogued by Charles Messier. Amateur telescope makers needing a summer vacation can take the family to Vermont for the Stellafane Convention in Springfield. New Englanders escaping winter weather head for Florida, where an exclusive star party limited to 300 amateurs occurs in the Keys every February. Arizona, however, because of altitude and excellent seeing, remains the first choice for many.

Who attends star parties? People like Mike Spooner, a 46-year-old power plant operator in Page, Arizona. Spooner constructed his first telescope at age 13. Now he hosts

star parties for children living on and around Arizona's sprawling Navajo reservation. "I tell kids they don't need to get an expensive telescope from some factory," says Spooner. "Build your own scope, I tell them, and wait for the perfect night."

Sound advice. But the fact remains that most science in America is capital-intensive. There are no amateur biochemists or freelance physicists. Research is conducted at large universities or corporate laboratories. In astronomy, too, most work is done by professionals, who combine telescopic and spacecraft observations. Unlike other sciences, however, astronomy still has room for amateurs.

Few professional astronomers spend time looking for comets or asteroids, even though one such object could cause catastrophic damage if it hit Earth. According to David Morrison of NASA's Ames Research Center, more people work a single shift at one McDonald's restaurant than monitor the 250 asteroids and comets believed to pose a threat to human life.

To shape a Pyrex blank for a telescope mirror, Pierre Schwaar pushes it back and forth over a similar disk. A grit slurry grinds the glass.

Schwaar, a telescope maker much in demand, inspects a 20-inch mirror whose concave surface has been coated with aluminum.

For every professional astronomer there are at least 20 amateurs who, with persistence, luck and a modicum of affordable equipment, can spot a comet and get credit for its discovery simply by calling the Central Bureau for Astronomical Telegrams in Cambridge, Massachusetts.

That's what happened on July 22, 1995, when parts supply manager Thomas Bopp drove to Vekol Valley, 50 miles south of Phoenix, to stargaze with friends.

"It was a clear night," remembers Bopp's acquaintance Bernie Sanden. "Some of the group were looking for globular clusters in Sagittarius, when Bopp noticed a fuzzy object near Messier 70." Bopp watched for an hour, constantly checking the object's position with reference to the stars around it. He became convinced it was a comet. As soon as he got home, he sent a telegram to the bureau, announcing his find.

That same night, Alan Hale spotted the fuzzy object from his home in Cloudcroft, New Mexico, and e-mailed his news to the bureau. His report arrived first. Hale, who has a doctorate in astronomy and had started a nonprofit research and education organization, was working in an amateur capacity. Hale and Bopp's discovery, the soon-to-be-famous Comet Hale-Bopp, blazed across the spring sky 20 months later with a tail nearly 100 million miles long.

Today, Bopp has forsaken his job for the lecture circuit and teaching, but on clear nights Sanden still returns to Vekol Valley. "Dark skies, high elevations and dry weather," he sighs. "For astronomers, Arizona is Mecca."

The first astronomer of note to be attracted to Arizona's night sky was Percival Lowell. He speculated that there was life on Mars, and in 1894 he began his search for Martians by building an observatory atop what came to be known as Mars Hill, outside the then tiny community of Flagstaff. Night after night, Lowell studied the Red Planet through a refractor telescope with a 24-inch objective lens that he purchased for $20,000. His detailed maps of Mars' "canals" became the basis of two books—*Mars as the Abode of Life* and *Mars and its Canals*—and the source of considerable second-guessing.

Things we've noticed about Americans:

There's a safe way of doing everything.

HUGO. 41 years as a human cannonball. Still going strong.

CASE IN POINT:

The secure Chevy Malibu.

- Next Generation driver and front-passenger air bags*.
- Daytime Running Lamps.
- Rugged steel safety cage.
- Side-door beams.
- Passlock® theft-deterrent system.
- Crush zones front and rear.
- Child security rear-door locks.
- Antilock brakes.
- 1-800-950-2438
- www.chevrolet.com/malibu
- $16,485†

Malibu.

The Car You Knew America Could Build.** Genuine Chevrolet

*Always use safety belts and proper child restraints, even with Next Generation air bags. See the owner's manual for more safety information. †1999 MSRP. Taxes, title, license fees and optional equipment extra. **Made in the U.S. of domestic & globally sourced parts. Malibu is a registered trademark and Chevy is a trademark of the GM Corp. ©1998 GM Corp. Buckle up, America!

Lowell never found Martians, but after Lowell's death, astronomer Clyde Tombaugh did discover the planet Pluto in 1930 from Lowell Observatory. The picturesque observatory now is visited by more than 70,000 people every year. Those who arrive at night can look through Lowell's 102-year-old telescope. But they seldom see astronomers at work, since Mars Hill today is encircled by the lights of Flagstaff.

Retired scientist James Trexler wheels a 25-inch reflecting telescope out of a trailer at the Whipple Star Party.

Arizona was a center for celestial observation centuries before Lowell arrived. The Hohokam Indians, who lived in the southern portion of the state near rivers whose tributaries sprang to life during flash floods, structured their lives and annual calendar around the phases of the sun and moon. Casa Grande, a clay tower located midway between Phoenix and Tucson, was used as an astronomical device as early as the 14th century. Once every $18\frac{1}{2}$ years, the setting moon aligns perfectly with a square hole in the upper part of the structure's west wall. Each year on the summer solstice, a circular window (also on the structure's west wall) aligns with the setting sun.

Six hundred years later, Arizona continues to be a center of astronomy. The state's popularity comes as neighboring California's observatories are being blinded by city light. Even at the darkest hours, Mount Wilson Observatory in the San Gabriel Mountains outside Los Angeles is bathed in twilight. Though miles from San Jose, Lick Observatory faces the same problems that have been confronting Mount Wilson Observatory for years. Palomar Observatory in rural San Diego County remains relatively dark, but each year the suburbs creep closer.

Astronomy is big business in Arizona. Though reliable statistics are hard to come by, the best estimates are that the state's six major centers of astronomical activity generate more than 800 jobs, with well over a billion dollars invested in infrastructure and equipment. Forty miles south of Tucson, the Smithsonian Institution's Fred Lawrence Whipple Observatory boasts the world's fifth-largest telescope. Within a couple of hours' drive to the east, atop Mount Graham, the University of Arizona's Steward Observatory is erecting a binocular telescope with two 8.4-meter mirrors. Kitt Peak alone has 12 to 15 separate observatories (depending on how you count), some with multiple instruments. Indeed, the demand for finely polished telescope mirrors is so great that Steward Observatory's Mirror Lab, located beneath the football stadium on the University of Arizona campus, has work orders that will keep its technicians busy through 2003.

A stop for many amateurs touring Arizona is a house in Phoenix, the home of Pierre Schwaar, a Swiss-born telescope maker. A former Air Force mechanic in Vietnam, Schwaar arrived in Arizona in 1973 along with Comet Kohoutek. He soon began making telescope mirrors by hand.

Making a telescope mirror is a long and laborious process. It begins with a glass blank that is methodically ground for hours with different grades of course grit until a concave surface is formed. The glass then is polished with a cerium oxide compound on a platform of pine pitch for another 16 hours until the resulting parabolic surface is accurate to within a millionth of an inch. Finally, the glass is shipped to a factory where the curved surface is coated with aluminum. When the finished mirror is returned, Schwaar inserts it, along with a second mirror and an eyepiece, into an appropriately sized cardboard tube that is wrapped with cloth and laminated, then affixed to a sturdy mount. Since 1985, Schwaar has produced 200 telescopes the old-fashioned way, a labor that nets him a mere $8 an hour.

Schwaar produces his mirrors on an oil drum in a kitchen encrusted with a fine layer of grit. A pan of pitch simmers quietly on the stove next to a pot of vegetable soup. It is not a workshop one expects from a master craftsman. But the mirrors in his handmade telescopes are so precise that customers will gladly wait six months to obtain one of his scopes.

"An investor wants me to set up a shop, but I can't turn out 30 telescopes a month without compromising quality," says Schwaar. "I have tried to hire workers, but it is hard to find someone with enough patience to do things properly. A quality mirror must be parabolized by hand."

Palace Hotel, Madrid

STAY FOUR NIGHTS, PAY FOR THREE.
NO WONDER THE RICH GET RICHER.

INTRODUCING a very special luxury vacation offer from Alitalia and The Luxury Collection. Fly Alitalia's incomparable Magnifica Class and stay for three nights in any participating Luxury Collection hotel throughout Europe, Africa and the Middle East, and you'll receive your fourth night absolutely free. We'll even include breakfast daily, hotel taxes and gratuities. And to celebrate Alitalia's increased service through Milan's new Malpensa Airport, we're also offering a special one-night rate, plus complimentary chauffeur service from the airport to these superb Luxury Collection hotels – Hotel Duca di Milano, Hotel Palace and Hotel Principe di Savoia. This offer is for a limited time only, so reserve your Magnifica Class flight at 800.223.5730 and your Luxury Collection accommodations at 800.325.3589, reference AZLUX. Or visit www.alitaliausa.com or www.luxurycollection.com

ALGARVE~COSTA SMERALDA~FLORENCE~LECCE~LONDON~MADRID~MILAN~PARIS~ROME~SALZBURG~SAN SEBASTIAN~SEVILLE~SOFIA~TENERIFE~VENICE~VIENNA~ADDIS ABABA~JEDDAH

THE LUXURY COLLECTION

Offer expires March 31, 1999. Subject to availability.

Alitalia

Arizona is rapidly becoming the capital of astronomical tourism. Observatory visitor centers are packed. Summer astronomy camps for children have waiting lists. Nighttime tours of Kitt Peak should be booked two weeks in advance. Even a luxury resort spa outside Phoenix is getting into the act by sponsoring star parties for its guests.

"Our weekly star parties are interesting, educational and unique," says Rick Riess, general manager of the Boulders resort in Carefree, Arizona. "Business groups often return just because they had such a good time stargazing." To preserve night vision on the resort's grounds, lights are kept low and guests are provided with flashlights to find their way around.

The astronomy circuit begins on Interstate 10, a broad swath of lonely concrete that promoters have dubbed the "Highway to the Stars" because it passes near six major observatories in Arizona, New Mexico and Texas. For travelers from the east, the first stop in Arizona is Eduardo Vega's Skywatcher's Inn, a hilltop retreat south of Benson, Arizona, replete with a working observatory.

Tucson, in the Sonoran Desert, is widely regarded as the center of U.S. astronomy.

A hospital pathologist in Tucson ("I look through a microscope by day and a telescope at night"), Vega built his observatory in 1990 as a place to escape to on weekends. But so many of his friends asked to spend the night that he began adding bedrooms. Today Vega's bed-and-breakfast observatory has three guest rooms (one of which even includes a comfy planetarium for astronomers who like sleeping under the stars) as well as a studio. "There's even a black-lit playroom for children," adds Vega, "with solar system mobiles."

The heart of the Skywatcher's Inn is the attached observatory, which comes alive shortly after dusk. "We have a Newtonian, one refractor, two computerized Schmidt-Cassegrains, a binocular telescope and a 20-inch Maksutov worth $65,000," says Vega, striding proudly past telescopes that stand about like siege cannons. "Here, let me roll back the roof."

As the roof trundles back, Vega's guests raise their eyes to the heavens, then move warily toward the telescopes, aided by tiny red-beamed flashlights—red light does not interfere with night vision. There are seven guests in all, and for five it is their second trip to the inn. "It is, how you say, the perfect night," says a Quebec schoolteacher fleeing the cloud cover of Montreal. He is searching for a star-forming region about 7,000 light-years away called the Eagle Nebula.

The roof rolls off the observing room, jammed with telescopes, at the Skywatcher's Inn. The dome at the rear houses another.

"Let me see," says 11-year-old Kevin Brauning, racing past a glowing computer monitor. "Be careful," says his father, Dennis, never lifting his eyes from a star atlas. "We're from Wichita, where you'd think there would be dark skies, but bright lights from a nearby Air Force base make stargazing almost impossible."

As the hour pushes past midnight, Dennis Brauning bids good night to his wife, Janine. Fortified with diet soda and chocolate chip cookies, Brauning continues to comb the sky, mesmerized by the cosmos and by the spirit if not the words of Jules-Henri Poincaré, who observed: "The

scientist does not study nature because it is useful to do so. He studies it because he takes pleasure in it, and he takes pleasure in it because it is beautiful."

Fifty miles west of Benson lies Tucson, a Sonoran Desert city widely regarded as the center of U.S. astronomy. Three major observatories are within an hour's drive of town. Perhaps that's why Tucson was the first large American city to reduce streetlight glare, restrict illuminated billboards and convince convenience stores to put neon signs at ground level.

In Tucson, it's possible to watch parabolic telescope mirrors more than 27 feet in diameter being polished to within a millionth of a millimeter at the Steward Mirror Lab, walk through a model asteroid on the University of Arizona campus, use a telescope free of charge in the Flandrau Science Center's observatory and hire an amateur astronomer (there are 300 in the local association) for the evening to guide you through the universe.

Tucson may have more stargazers (some retirees call themselves "stargeezers") than any other city in the world. One of the more ardent is former IBM software programmer Derald Nye, who has a passion for solar eclipses. "I've seen 21 in all," he confides. "Kenya, Tasmania, Java, the Truk lagoon. I even saw one eclipse in Mongolia."

Like many Tucson residents, Nye has a telescope, a 16-inch, f/15 Cassegrain he calls "The Beast." What sets Nye apart is that he also has an observatory in his backyard made from a converted grain silo. Naturally, he lives on Observatory Drive.

Nye's observatory seems spartan, however, when compared with that assembled by radiologist Tim Hunter, whose backyard dome includes a computerized reflector telescope and a charge-coupled device for digitized photography, both of which are linked to a celestial database packed with 65,000 objects. With computer programs like MegaStar and The Sky, Hunter no longer has to search the heavens for a particular celestial object. He simply taps a few keys and watches the telescope turn to the precise spot in the sky where the object is at that instant in time. Laughs Hunter: "The only mistake you can make is to not take the lens cap off the telescope."

The biggest star in Arizona astronomy is Canadian David Levy (SMITHSONIAN, June 1992), who moved to Tucson in 1979. Since then, he has discovered 8 comets from his backyard, and another 13 from Palomar Mountain, working with Carolyn and the late Gene Shoemaker. (He has also succeeded the late Carl Sagan in writing about science for *Parade* magazine.) Levy is the author of 21 books and several screenplays—not a professional astronomer. Yet on most evenings he can be found in his backyard observatory searching the sky with Miranda, a 16-inch reflecting telescope named for one of the moons of Uranus.

"Big telescopes maintained by universities and the government are narrowly focused so they can peer deep into space. My scope is not as powerful," says Levy, "but it will cover one third of the night sky in five hours. They try to determine the origin of the universe; I'm looking for comets. It's the world's slowest sport." It was Fred Whipple, former director of the Smithsonian Astrophysical Observatory in Cambridge, Massachusetts, who first described comets as "dirty snowballs." Many astronomers believe they were the source of Earth's life-giving water. But they also could be deliverers of mass destruction. "I think of myself as a night watchman," says Levy as

he goes about methodically searching for fuzzy objects.

It is a warm summer night, not a cloud in the sky. To the west, Tucson's lights burn dimly. But here in the desert all is quiet, except for the sounds of a Celtic harp and pan flute filtering from the observatory's stereo.

"For me the search is more important than the discovery," says Levy as he slowly moves Miranda into another field. "We're sitting here relaxing with good music. Isn't this a wonderful way to enjoy the night sky?"

Is there life on other planets? "I don't think we're alone," says Levy. "Two years ago, a planet was discovered orbiting the star 47 Ursae Majoris. It should be part of a whole solar system. I like to think when I'm looking in that direction that there's someone up there looking back."

Big-ticket astronomy has been slowing in the United States since the end of the Cold War. Instruments in place, such as the Hubble Space Telescope and the twin Keck telescopes in Hawaii, are running full tilt. But there are not as many new projects on the drawing boards. Few organizations, universities or otherwise, have the money.

Interest in amateur astronomy, however, is soaring. At one recent star party, 100 Spanish-speaking residents of Nogales, Arizona, drove 35 miles north to Whipple Observatory to peer through telescopes set up by 200 amateur astronomers from Tucson. It was a warm Saturday night, and the mood was festive.

"*Es fabuloso*," remarked a man wearing cowboy boots and a Western shirt after looking at the "seas" on the surface of the moon through a large refractor. At other scopes people were lined up to see the Ring Nebula, the Swan Nebula and the Butterfly star cluster.

"I think I would like to have a telescope, Papa," said one boy after studying Polaris, the north star, for several minutes. "So would I," his father replied, "so would I."

David DeVoss manages a newspaper development program in Sarajevo. Eric Sander has shot Smithsonian *stories on unusual bikes and unusual chickens. He is finishing a photographic look at the West.*

Kevin and Stephen Brauning bed down under stars projected onto a dome in their room at the Skywatcher's Inn.

Most men will have an isolated erection problem at some time in their lives, but for others it happens more frequently. If the inability to respond naturally to your partner has become a recurring problem, you may be suffering from a treatable medical condition called erectile dysfunction (ED), also known as impotence. The following questions and answers are designed to give you a brief introduction to the causes of ED and the various treatment options available. If you believe you are suffering from ED, or want to know more about the condition, talk to your doctor or other healthcare professional.

Erectile dysfunction: what every man should know

What is ED?

Erectile dysfunction is the consistent inability to achieve and/or maintain an erection sufficient for satisfactory sexual activity. That means not just an occasional problem, but one that has been occurring repeatedly for a period of time. It's a widespread condition, shared by approximately 30 million men in the United States.

What causes ED?

It was once believed that ED is all in your head, or just an inevitable result of getting older. Actually, the majority of ED cases are associated with physical conditions or events, including some that are age-related. The most common risk factors for ED include:

- *Diabetes, high blood pressure, hardening of the arteries, or high cholesterol*
- *Injury or illness, such as spinal cord injury, multiple sclerosis, depression, stroke, or surgery for the prostate or colon*
- *Medications that may bring about ED as an unwanted side effect*
- *Cigarette smoking or alcohol/drug abuse*
- *Psychological conditions, such as anxiety and stress*

If you want to know more about ED, talk to your doctor.

Can erectile dysfunction be treated?

Yes. The good news is that, regardless of the cause, the vast majority of ED cases are treatable. Patients have a variety of treatment options from which to choose, including oral medication, hand-held vacuum pumps, self-administered injections, pellet suppositories, and surgical implants.

Can anyone use these treatments?

It's important to remember that these treatments are not for everyone, but only for men diagnosed with ED. You and your doctor can determine the appropriate treatment for you. Because sexual activity can be demanding on the heart, you should talk to your doctor before using any treatment for ED.

How do I know if I have ED?

If you have erection problems, you probably already know it. But before your condition can be treated, you need to be diagnosed by your doctor. There is no need to be embarrassed or ashamed when discussing ED with your doctor. He or she has probably diagnosed and treated ED many times. Your doctor can provide you with understanding, support, and best of all, information.

To diagnose ED, doctors typically ask a few specific questions and give a routine physical exam. This should help your doctor arrive at a diagnosis. Before starting any treatment for ED, ask your doctor if your heart is healthy enough to handle the extra strain of having sex.

Based on this information, you and your doctor will decide on the treatment that is best for you.

REMEMBER:

ED is a common medical condition.

It's not an inevitable result of growing older.

ED is treatable with a variety of methods.

Only your doctor can prescribe the appropriate treatment.

HC281A98

© 1998, Pfizer Inc

Pfizer U.S. Pharmaceuticals

It blurs the line betw

Trimmed with leather that's perforated to further absorb interior noise, Town & Country boasts Quad Command bucket seats. Also, the front seats have eight-way power, are heated and have two driver's seat memory settings.

Preferred Suede is a registered trademark of the Milliken Company. *Strategic Vision's 1998 Vehicle Experience Study™ surveyed 32,191 Oct. - Nov. new vehicle buyers of 200+ models after

een needs and wants.

It's the automotive world's most ingenious way of reconciling space with luxury. After all, no other vehicle allows you to seat seven in a cabin tailored with leather and Preferred Suede.® The 1999 Chrysler Town & Country Limited. A vehicle that also features Dual Zone Temperature Control and a fold-down center armrest on the rear bench seat. Add a 10-speaker, 200-watt CD/cassette stereo and it's small wonder that Town & Country won Strategic Vision's 1998 Total Quality Award™ for "Best Ownership Experience" in minivans.* Inquiries? Call 1.800.CHRYSLER. Or you can visit www.chryslercars.com.

ENGINEERED TO BE GREAT CARS

CHRYSLER TOWN & COUNTRY

the first 90 days of ownership.

NEW YORK CITY, USA, 1991

every dog has its day

in Elliott Erwitt's new book

IN A CAREER THAT HAS SPANNED more than 50 years, Elliott Erwitt has traveled the globe in pursuit of his craft. As a photojournalist, commercial photographer, artist and filmmaker, he has ventured everywhere from the remote highlands of New Guinea to the glitzy beaches of Saint-Tropez. In 1959 he flew to Moscow to photograph the Cold War confrontation between Nixon and Khrushchev. Five years later he journeyed to Cuba to spend a week with Fidel Castro. Focusing his lens on subjects as diverse as the cosmopolitan cafés of Paris and the impoverished villages of Cambodia, he has achieved international recognition through the pages of such magazines as *Time*, *Life*, *Geo*, *Paris Match* and *Stern*.

Along the way, Erwitt has managed to document a daunting number of dogs. Now more than 500 of these candid canine "snaps" have been combined in a new book. Just out from Phaidon Press, *DogDogs* is packed with playful images of canines: Pekingese, Maltese, bassett hounds and boxers; Dobermans, dachshunds, cocker spaniels and chows. Dogs snacking, scratching, strolling and stretching. Dogs on the move, in the groove, on the make and on the take—many caught in comical situations. "I'm very serious about not being serious," maintains Erwitt, whose wry humor and discerning wit are evident throughout. A tiny behatted Chihuahua is dwarfed by a pair of boots and the behemoth front legs of a Great Dane (above). A pompadoured poodle surveys the scene at a Birmingham dog show. A beagle bums a ride in a plastic shopping bag. There are poignant and poetic images as well—a mongrel begging in the streets of Bahia, Brazil, a young cowboy and his collie profiled in a moment of silent commune.

"In the end, this is not a book of dog pictures but of dogs in pictures," says Erwitt, who shares custody of a Hamburg-born cairn with his wife, Pia. "For me, the dogs are both an excuse and a reason for taking these pictures. They give me the excuse because they make good subjects. I like them, people want to see them, I can't resist." —*Diane M. Bolz*

©ELLIOTT ERWITT/MAGNUM PHOTOS, INC.

BRIGHTON, ENGLAND, 1956

ATHENS, GREECE, 1972

PARIS, FRANCE, 1951

PARIS, FRANCE, 1989

WYOMING, USA, 1953

BAHIA, BRAZIL, 1963

PARIS, FRANCE, 1989

BIRMINGHAM, ENGLAND, 1991

NEW JERBEY, USA, 1971

A KNIGHT IN SHINING DOUBLE-SIDED GALVANIZED STEEL.

The new YUKON DENALI

Like the great GMCs before it, the new Yukon Denali™ is wrapped in luminous steel. Underneath are a heavy-gauge steel frame and a 255-horsepower Vortec™ V8 engine. Inside are four heated, leather-trimmed seats and a Bose® Acoustimass®

audio system. And even deeper inside is nearly a century of providing vehicles for professionals who depend on their trucks to do things somewhat more demanding than impressing the neighbors. Call 1-888-GMC-DENALI or www.denali.gmc.com.

GMC®

Do one thing. Do it well.™

GET
RICH
NOW!!
MAKE
TEN MILLION
IN
SIX
DAYS
WITH A
NOT A PONZI-SCHEME
X.....
MSCAULEY

IN PONZI WE TRU$T

CON ARTISTS TODAY ARE USING THE INTERNET TO BORROW FROM PETER TO PAY PAUL, A SCHEME MADE FAMOUS BY A CROOK SO SUCCESSFUL THAT HIS NAME NOW GRACES THE AGE-OLD SCAM

JOHN KENNETH GALBRAITH ONCE observed that "the man who is admired for the ingenuity of his larceny is almost always rediscovering some earlier form of fraud." Although the details may vary, all flimflam games rely on their basic ability to make a lie look like the truth. Even today, confidence artists continue to work their scams with great success. Time and again, people from every walk of life demonstrate their ability to abandon common sense and believe in something that is simply too good to be true by succumbing to the con man's call.

The Internet is the latest forum for fraud operators, who are cashing in on the benefits of relatively cheap technology, a huge and rapidly growing market and the entrepreneurial nature of many consumers who cruise the Web. Susan Grant, director of the Internet Fraud Watch Program of the National Consumers League, says the Washington, D.C.-based group received 1,152 reports of Internet fraud in 1997. "But that's not the entire universe of Internet fraud," she says. "It's just a picture." Meanwhile, the Federal Trade Commission has brought more than 25 separate law-enforcement actions, involving thousands of consumers, against defendants whose practices used or involved the Internet.

Yet when all is said and done, the Internet is merely a vehicle for swindlers to reach their victims. "What is new—and striking—is the size of the potential market and the relative ease, low cost and speed with which a scam can be perpetrated," FTC Chairman Robert Pitofsky told a Senate subcommittee during a February hearing on Internet fraud. But there is nothing new in the scams themselves: they are the same pyramid schemes, phony business opportunities and phantom storefronts that have been fooling the unwary and greedy for centuries.

Many of these computer-savvy crooks have taken their cue from an Italian immigrant named Charles Ponzi, a dapper, five-foot-two-inch rogue who in 1920 raked in an estimated $15 million in eight months by persuading tens of thousands of Bostonians that he had unlocked the secret to easy wealth. Ponzi's meteoric success at swindling was so remarkable that his name became attached to the method he employed, which was nothing more than the age-old game of borrowing from Peter to pay Paul. The rules

BY MARY DARBY

UPI/CORBIS-BETTMANN; P. 134 ADAM MCCAULEY

Charles Ponzi, convicted of forgery in Canada in 1908 (below), had taken investors for $15 million in eight months when he posed with his wife and mother (left) at his Massachusetts home in 1920.

are simple: money taken from today's investors is used to pay off debts to yesterday's investors. Typically, these investors are lured by promises of exorbitant profits—50, even 100 percent. Often, they are coached to recruit more investors to enrich themselves further. The problem is that there is no actual investment going on; the only activity is the shuffling of money from new investors to old ones. Everything is fine until the scheme runs out of new investors and the whole house of cards comes tumbling down.

We still hear about Ponzi schemes, or pyramid schemes, as they are more frequently called. Last year, the collapse of dozens of Ponzi schemes in Albania sparked mass rioting that escalated into a national crisis. And in New York, investors were out an estimated $1.5 billion when the Bennett Funding Group, described by regulators as a "massive, ongoing Ponzi scheme," went belly-up. On the Internet, a company called Fortuna Alliance promised investors monthly returns as high as $5,000; more than 8,600 people bought into the scheme, which was shut down by the FTC in 1996. Fortuna eventually stipulated to an injunction prohibiting its alleged scam. In January 1998, a judge ordered the company to start paying back its investors. The FTC says it is seeking $5 million in refunds for consumers.

Ponzi himself was probably inspired by the remarkable success of William "520 percent" Miller, a young Brooklyn bookkeeper who in 1899 fleeced gullible investors to the tune of more than $1 million. Years later, "Honest Bill," as he came to be known after a jail term in Sing Sing and a turn down the straight and narrow, questioned the workings of Ponzi's enterprise. "I may be rather dense, but I cannot understand how Ponzi made so much money in so short a time," Miller observed to a reporter from the *New York Evening World* mere days before the bottom fell out of Ponzi's scheme.

But whatever Ponzi lacked in originality, he had plenty of finesse—and chutzpah. "He was a fascinating crook—the ultimate con man," says Ponzi biographer Donald Dunn. Ponzi's investors ran the gamut from working-class Italian immigrants like himself to cops and politicians. He even accepted money from a priest.

In the summer of 1920, Ponzi was front-page news virtually every day in the Boston papers. But prior to 1920, few people outside Boston's Italian community had ever heard of Charles Ponzi. He told the *New York Times* that he had come from a well-to-do family in Parma, Italy. He also claimed to have studied at the University of Rome, but said that he was not suited to the academic life. "In my college days, I was what you would call here a spendthrift. That is, I had arrived at the precarious period in a young man's life when spending money seemed the most attractive thing on earth."

When his money ran out, young Ponzi decided the wisest course of action was to head west. On November 15, 1903, he stepped off the gangplank of the SS *Vancouver* in Boston Harbor with only a couple of dollars in his pocket—the result, he said, of being taken in by a cardsharp during the transatlantic crossing. "I landed in this country with $2.50 in cash and $1 million in hopes, and those hopes never left me," Ponzi later told the *New York Times*.

The road to riches was a long one for the ever-optimistic Ponzi, who waited and bused tables in New York City, painted signs in Florida and worked small jobs up and down the East Coast. In 1917, he headed back to Boston in response to a newspaper ad placed by merchandise broker J. R. Poole, who needed a clerk.

He soon met young Rose Gnecco on a streetcar and wooed her energetically. A small, pretty woman from a modest background, Rose was swept off her feet by her older, seemingly sophisticated suitor. Rose's youthful innocence shines through even in newspaper photographs, as does her unswerving devotion to her husband. The couple married in February 1918. Ponzi took over his father-

UNCOVER SOME OF HISTORY'S FORGOTTEN TREASURES
IN THE MOST UNUSUAL PLACES.

History's LOST & FOUND

A WORLD PREMIERE EVENT
DECEMBER 1-3 9PM ET/10PM PT

Einstein's brain, the Maltese Falcon, and the convertible that took JFK on that fateful drive in Dallas. These items, and the remarkable stories behind them, are just the beginning of what you'll uncover on History's Lost and Found.

Photo Credit: JFK Photo Cortes-Bellmann

www.HistoryChannel.com

© 1998 A&E Television Networks. All Rights Reserved.

THE HISTORY CHANNEL®
WHERE THE PAST COMES ALIVE™

THE OFFICIAL NETWORK OF EVERY MILLENNIUM

Frightened by news of an investigation into Ponzi's affairs, Bostonians—who just days before had lined up to invest—mob School Street and Pi Alley to redeem their notes.

in-law's grocery business and proceeded to make a mess of it. (He had already left Poole, who apparently failed to recognize his new clerk's latent financial genius.)

It was not long before Ponzi struck out on his own, and finally hit upon the scheme that—for a short time—was to make him rich beyond his wildest dreams.

He had come up with the idea for an international trade journal, which he believed could make a tidy advertising profit. But the bank where he sought a $2,000 loan, Hanover Trust Company, did not agree. Following a brusque rejection by the bank president, Ponzi sat alone in his little School Street office and pondered his next move.

It came to him while opening his mail one day in August 1919. As Ponzi relates in his shamelessly exuberant autobiography, *The Rise of Mr. Ponzi,* a business correspondent from Spain, interested in learning more about Ponzi's aborted journal, had enclosed a small paper square that put the well-oiled wheels of Ponzi's imagination into overdrive.

The little scrap of paper was an international postal reply coupon, and the Spanish correspondent had enclosed it in prepayment of reply postage. Purchased in a Spanish post office for 30 centavos, it could be exchanged for a U.S. postage stamp worth 5 cents, a redemption rate that was fixed by international treaty. But the Spanish peseta, Ponzi knew, had fallen recently in relation to the dollar. Theoretically, someone who bought a postal reply coupon in Spain could redeem it in the United States for about a 10 percent profit. Purchasing coupons in countries with weaker economies could increase that margin substantially, he reasoned. It should be possible, then, to make a financial killing by buying huge quantities of these coupons in certain overseas countries and redeeming them in countries with stronger currencies. Ponzi called his new business the Securities Exchange Company, and set out to promote his idea.

It was a big idea—one that Ponzi managed to sell to thousands of people. He claimed to have elaborate networks of agents throughout Europe who were making bulk purchases of postal reply coupons on his behalf. In the United States, Ponzi asserted, he worked his financial wizardry to turn those piles of paper coupons into larger piles of greenbacks. Pressed for details on how this transformation was achieved, he politely explained that he had to keep such information secret for competitive reasons.

Of course, there was no network of agents. Nor, for that matter, did Ponzi expend any effort to corner the market on postal reply coupons. A final audit of his company's assets after the whole business was over turned up $61 worth of the coupons, according to Dunn.

Dunn's book, *Ponzi! The Boston Swindler*, provides a dramatized account of Ponzi's wild ride to riches and shows that, if anything, Ponzi's genius lay in psychology, not finance. Ponzi knew that his concept—the

A pill that helps men with erectile dysfunction respond again.

Naturally, the response has been positive.

Now there's a simple new pill for the treatment of erectile dysfunction (a common medical problem also called impotence).

VIAGRA® (sildenafil citrate) is a prescription pill that may help you achieve erections the natural way—in response to sexual stimulation. Ask your doctor if VIAGRA is the right step for you.

VIAGRA should not be taken by men who use drugs known as nitrates (most often used to control angina) in any form, at any time. Nitrates can reduce blood pressure to unsafe levels if used with VIAGRA. Be sure to talk to your doctor about any medications you take.

In clinical trials, VIAGRA was well tolerated. Some men experienced side effects, including headache, facial flushing, and upset stomach. A small percentage of men experienced mild and temporary visual effects. (See product information for more details.)

For more information, call 1-888-4VIAGRA or visit www.viagra.com.

VIAGRA®
(sildenafil citrate) tablets
Let the dance begin.

Please see important product information for VIAGRA (25-mg, 50-mg, 100-mg) tablets on the following page.

Let the dance begin.

PATIENT SUMMARY OF INFORMATION ABOUT

VIAGRA®
(sildenafil citrate) tablets

This summary contains important information about VIAGRA®. It is not meant to take the place of your doctor's instructions. Read this information carefully before you start taking VIAGRA. Ask your doctor or pharmacist if you do not understand any of this information or if you want to know more about VIAGRA. This medicine can help many men when it is used as prescribed by their doctors. However, VIAGRA is not for everyone. It is intended for use only by men who have a condition called erectile dysfunction. **VIAGRA must never be used by men who are taking medicines that contain nitrates of any kind. This includes nitroglycerin.**

What Is VIAGRA?

VIAGRA is a pill used to treat erectile dysfunction (impotence) in men. It can help many men who have erectile dysfunction get and keep an erection when they become sexually excited (stimulated). You will not get an erection just by taking this medicine. VIAGRA helps a man with erectile dysfunction get an erection only when he is sexually excited.

How Sex Affects the Body

When a man is sexually excited, the penis rapidly fills with more blood than usual. The penis then expands and hardens. This is called an erection. After the man is done having sex, this extra blood flows out of the penis back into the body. The erection goes away. If an erection lasts for a long time (more than 6 hours), it can permanently damage your penis. You should call a doctor immediately if you ever have a prolonged erection that lasts more than four hours.

Some conditions and medicines interfere with this natural erection process. The penis cannot fill with enough blood. The man cannot have an erection. This is called erectile dysfunction if it becomes a frequent problem.

During sex, your heart works harder. Before you start any treatment for erectile dysfunction, ask your doctor if your heart is healthy enough to handle the extra strain of having sex.

How VIAGRA Works

In many men with erectile dysfunction, VIAGRA helps the body's natural erection process. When a man is sexually excited, the penis will fill with enough blood to cause an erection. After sex is over, the erection goes away.

VIAGRA Is Not for Everyone

VIAGRA is only for patients with erectile dysfunction. VIAGRA is not for newborns, children, or women. Do not let anyone else take your VIAGRA. VIAGRA must be used only under a doctor's supervision.

As noted above (*How Sex Affects the Body*), ask your doctor if your heart is healthy enough for sexual activity.

VIAGRA must never be used by men who are taking any medicines that contain nitrates. Nitrates are found in many prescription medicines that are used to treat angina (chest pain due to heart disease) such as:

- nitroglycerin (sprays, ointments, skin patches or pastes, and tablets that are swallowed or dissolved in the mouth)
- isosorbide mononitrate and isosorbide dinitrate (tablets that are swallowed, chewed, or dissolved in the mouth)

Nitrates are also found in illicit drugs such as amyl nitrate or nitrite ("poppers"). If you are not sure if any of your medicines contain nitrates, or if you do not understand what nitrates are, ask your doctor or pharmacist. If you take VIAGRA with any nitrate medicine or illicit drug containing nitrates, your blood pressure could suddenly drop to an unsafe level. You could get dizzy, faint, or even have a heart attack or stroke.

What VIAGRA Does Not Do

- VIAGRA does not cure erectile dysfunction. It is a treatment for erectile dysfunction.
- VIAGRA does not protect you or your partner from getting sexually transmitted diseases, including HIV—the virus that causes AIDS.
- VIAGRA is not a hormone or an aphrodisiac.

What To Tell Your Doctor Before You Begin VIAGRA

Only your doctor can decide if VIAGRA is right for you. You will need to have a physical exam to diagnose your erectile dysfunction and to find out if you can take VIAGRA alone or with your other medicines.

Be sure to tell your doctor if you:

- have ever had any heart problems (angina, chest pain)
- have ever had any kidney problems
- have ever had any liver problems
- have ever had any blood problems, including sickle cell anemia or leukemia
- are allergic to sildenafil or any of the other ingredients of VIAGRA tablets
- have a deformed penis, Peyronie's disease, or ever had an erection that lasted more than 6 hours
- have stomach ulcers or any types of bleeding problems
- have a rare inherited eye disease called retinitis pigmentosa
- are taking any other medicines

VIAGRA and Other Medicines

Some medicines can change the way VIAGRA works. Tell your doctor about **any medicines** you are taking. Do not start taking any new medicines before checking with your doctor or pharmacist. This includes prescription and nonprescription medicines or remedies. Remember, VIAGRA should never be used with medicines that contain nitrates (see *VIAGRA Is Not for Everyone*). VIAGRA should not be used with any other medical treatments that cause erections. These treatments include pills, medicines that are injected or inserted into the penis, implants or vacuum pumps.

Finding the Right Dose for You

You will learn how well VIAGRA works for you through your personal experience. If you do not get the results you expect, talk with your doctor. VIAGRA comes in different doses (25 mg, 50 mg and 100 mg). You and your doctor can determine the dose that works best for you.

- Do not take more VIAGRA than your doctor prescribes.
- If you think you need a larger dose of VIAGRA, check with your doctor.
- VIAGRA should not be taken more than once a day.

If you are older than age 65, or have serious liver or kidney problems, your doctor may start you at the lowest dose (25 mg) of VIAGRA.

How To Take VIAGRA

Take VIAGRA about one hour before you plan to have sex. Beginning in about 30 minutes and for up to 4 hours, VIAGRA can help you get an erection if you are sexually excited. If you take VIAGRA after a high-fat meal (such as a cheeseburger and french fries), the medicine may take a little longer to start working. VIAGRA can help you get an erection when you are sexually excited. You will not get an erection just by taking the pill.

Possible Side Effects

Like all medicines, VIAGRA can cause some side effects. These effects are usually mild and do not last long. Some of these side effects are more likely to occur with higher doses. The most common side effects of VIAGRA are headache, flushing of the face, and upset stomach.

Less common side effects that may occur are temporary changes in color vision (such as trouble telling the difference between blue and green objects or having a blue color tinge to them), eyes being more sensitive to light, or blurred vision. In extremely rare instances, men may have an erection that lasts many hours. You should call a doctor immediately if you ever have an erection that lasts more than four hours (see *How Sex Affects the Body*). VIAGRA may cause other side effects besides those listed on this sheet. If you want more information or develop any side effects or symptoms you are concerned about, call your doctor.

Accidental Overdose

In case of accidental overdose, call your doctor right away.

Storing VIAGRA

Keep VIAGRA out of the reach of children. Keep VIAGRA in its original container. Store at room temperature (59°-86°F or 15°-30°C).

For More Information on VIAGRA

VIAGRA is a prescription medicine used to treat erectile dysfunction. Only your doctor can decide if it is right for you. This sheet is only a summary. If you have any questions or want more information about VIAGRA, talk with your doctor or pharmacist or call 1-888-4VIAGRA.

HC302A98

VIAGRA®
(sildenafil citrate) tablets

HC121A98A © 1998, Pfizer Inc Printed in USA/September 1998

Pfizer U.S. Pharmaceuticals

path to easy riches—was so alluring that the worst thing he could do was try to sell it too aggressively. Borrowing a page or two from *Tom Sawyer*, he cultivated an image among friends and acquaintances as a man on the verge of wealth who preferred not to discuss his good fortune in detail—unless, of course, he was pressed. In his role as the busy but cheerful investment expert, Ponzi showed up at boccie games and neighborhood cafés, plied his pals with good cigars and bonhomie, then rushed off to meet with one of his many important "clients," Dunn relates.

Only after his victims were well primed was Ponzi ready to dangle his bait: the grand plan in which his investors received 50 percent interest in 90 days. (Later he sweetened the pot, promising 50 percent interest in 45 days.) By December, the money had begun to roll in.

Most of the actual investment pitches were done by sales agents who were trained by Ponzi and received 10 percent commissions for investments that they brought in to him. In turn, many of those sales agents recruited "subagents" who received 5 percent commissions for new investors. Once Ponzi paid off his first round of investors, word of the financial "wizard" on School Street spread quickly. Ultimately, some 40,000 people joined the feeding frenzy. Many people simply reinvested their profits with Ponzi, thereby relieving him of actually having to make good on his promise. At the height of his success, Ponzi had offices from Maine to New Jersey, and was fending off shady offers from prospective "partners" in New York.

The newspapers caught wind of Ponzi after a man named Joseph Daniels filed a $1 million suit against him in July 1920, according to Dunn. Daniels, a furniture salesman, laid claim to a share of Ponzi's fortune on the basis of an old debt. His lawsuit for what was at the time an enor-

mous amount of money started a buzz about Ponzi outside the circle of investors he had cultivated.

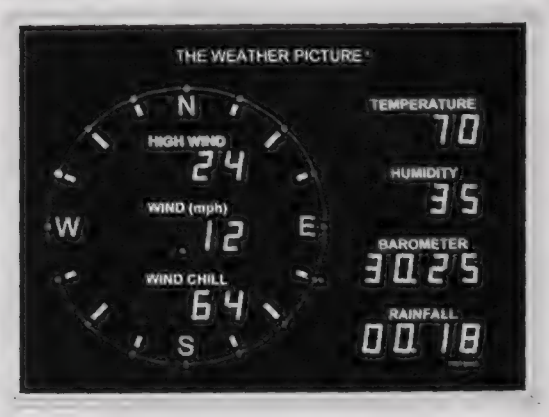
By then, Ponzi had built the lifestyle he had pursued for so many years: a 12-room mansion in upscale Lexington; servants; a couple of automobiles, including a custom-built limousine; and fine clothes and gold-handled Malacca canes for himself, and diamonds and other baubles for Rose. He purchased commercial and rental properties all over Boston and acquired stock in several banks. He even bought out his former employer, Poole. "The more I bought, the more I wanted to buy," Ponzi wrote. "It was a mania." But what he really wanted was control of a bank. He arranged a takeover of Hanover Trust, the same bank that had turned down his loan application the previous year. A few months later, when Ponzi fell, so did Hanover Trust. (The Commonwealth of Massachusetts, it turned out, had $125,000 on deposit with Hanover Trust—a revelation that figured in the September 1920 resignation of State Treasurer Fred Burrell.)

On July 24, 1920, the *Boston Post* ran a front-page feature on Ponzi with the headline: "DOUBLES THE MONEY WITHIN THREE MONTHS; 50 Per Cent Interest Paid in 45 Days by Ponzi—Has Thousands of Investors." The article described his rags-to-riches ascent, including details of his postal reply coupon scheme. It pegged Ponzi's worth at $8.5 million.

Monday, the 26th, started out as a banner day for Ponzi. The scene that awaited him as he approached his office that morning in his chauffeur-driven Locomobile "was one that

The *Boston Post*, whose coverage won a Pulitzer, spoofed Ponzi and investors alike.

I AM STILL SOLVENT!
RAINBOW
PONZI
PONZI'S POT OF GOLD
50 PER CENT IN 45 DAY
I'LL BE NEXT BY NEXT WEEK!
IT'LL TAKE SOME PUT TO STAND THIS RUN!
NEVER AGAIN
I HOPE I BEAT OU THE PROBE
BOSTON'S GET RICH QUICK "INVESTORS" 25,000 STRONG
I'LL QUIT TRYING TO BE A WALLINGFORD AGAIN!
MC MASTERS SAYS GET YOUR DOUGH QUICK!
I GREW THESE WAITING IN LINE TO CASH IN!
I'LL GET MINE BY OCTOBER AT THIS RATE!
SUBURBAN GET RICH QUICK RAINBOW CHASERS.
FORWARD TO TH' BOX



Size shown: 15 ¾" x 11 ¾"

Put the weather on your wall

The Weather Picture™ is an eye-popping new wall unit that continuously displays all the vital weather data you've pre-selected. Big red numerals are easy to read from across the room, day or night.

Available in 2 sizes, in an elegant brushed aluminum or solid teak frame. Teamed with our famous ULTIMETER® Weather Station, The Weather Picture System provides plenty of data to satisfy the most dedicated weather buff.

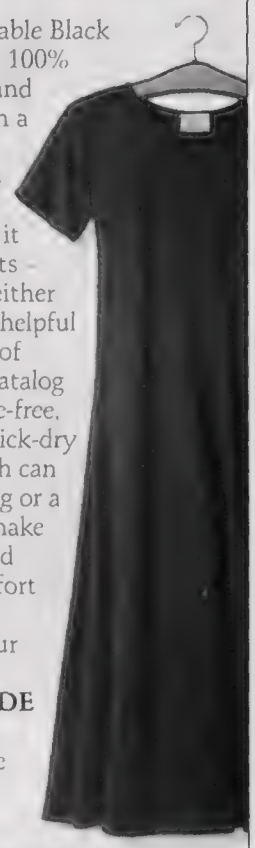
For complete details, write or call us TOLL-FREE at **1-800-USA-PEET**.

Wireless display now available!

Visit our Web Site to see and *actually try* our Weather Stations:
www.peetbros.com

PEET BROS COMPANY
1308-812S Doris Ave., Ocean, NJ 07712
Our 22nd year ©1998 Peet Bros

The Indispensable Black Travel Dress™



Our Indispensable Black Travel Dress is 100% wrinkleproof and tucks snugly in a corner of your suitcase. Dress it up with pearls or dress it down with flats – it looks great either way. It's just one of over 350 helpful products in our new catalog of uncommon travel gear. The catalog is filled with versatile, wrinkle-free, lightweight, easy-to-pack, quick-dry travel clothes, many of which can double for daytime sightseeing or a night on the town. We also make exceptional luggage, totes, and tools to assure the most comfort and least hassle while away from home. Call now for your **FREE CATALOG** and **FREE OUTFITTING GUIDE** with suggested packing lists and good, solid advice for the trip you're planning!

Indispensable Black Travel Dress™
XS–XL. Regular and Petite #5183 $99 Plus S [illegible]
Same Day Shipping • 100% Guarantee • Open 24 Hours

TRAVELSMITH
60 [illegible] • [illegible] • WWW.TRAVELSMITH.COM
800-950-1600 DEPT SMØ185Ø

BOSTON PUBLIC LIBRARY, PRINT DEPARTMENT

Expand *your* universe with the revolutionary Meade® ETX™ Telescope

Observe land, sea or sky in stunning high-resolution detail with the world's best-selling modern telescope.

Explore hidden corners of the universe with the Meade ETX. As *Sky & Telescope* reported, *"The Cassini Division in Saturn's rings popped into view…I could see every wisp of velvet on the antlers of a deer 50 feet away…the ETX [is] an ideal all-purpose telescope for anyone wanting to inspect eagles at 100 yards or stars at 100 light-years…a compact, portable telescope with first-class optics."* The Meade ETX: there's no other telescope like it in the world.

See it now at over 1000 Meade dealer locations in the U.S.A. and Canada, including

THE NATURE COMPANY®

1-800-367-6178

MEADE

Call **1-800-62-MEADE** for a free copy of **Meade Telescope Catalog #134** or for other dealer locations near you. ETX Telescope: $595; shown with optional camera adapter. Other premium-quality Meade telescopes from $100 complete. Meade Instruments Corp., 6001 Oak Canyon, Irvine, CA 92620. FAX: (949) 451-1460.
www.meade.com
© 1998

Tektronix®

CHOOSING A COLOR PRINTER HAS JUST BECOME A BLACK & WHITE DECISION.

© 1998 Tektronix is a registered trademark of Tektronix, Inc.

African Safaris

From 11 to 22 days, our safaris take you to the best wildlife parks and reserves in southern and eastern Africa.

Private Planes • Deluxe Tented Camps
Legendary Game Lodges

From $3,990 including round-trip air from New York

Request your catalog today,
1-800-964-0500,
or see your travel agent.

INTRAV
Exploring the World Since 1959

Ponzi looks upbeat as he heads to court. Found guilty, he would serve a total of 11 years on federal and state charges.

no man could forget," he later wrote.

"A huge line of investors, four abreast, stretched from the City Hall Annex, through City Hall Avenue and School Street, to the entrance of the Niles Building, up stairways, along the corridors . . . all the way to my office! . . .

"Hope and greed could be read in everybody's countenance. Guessed from the wads of money nervously clutched and waved by thousands of outstretched fists! Madness, money madness, the worst kind of madness, was reflected in everybody's eyes! . . .

"To the crowd there assembled, I was the realization of their dreams. . . . The 'wizard' who could turn a pauper into a millionaire overnight!"

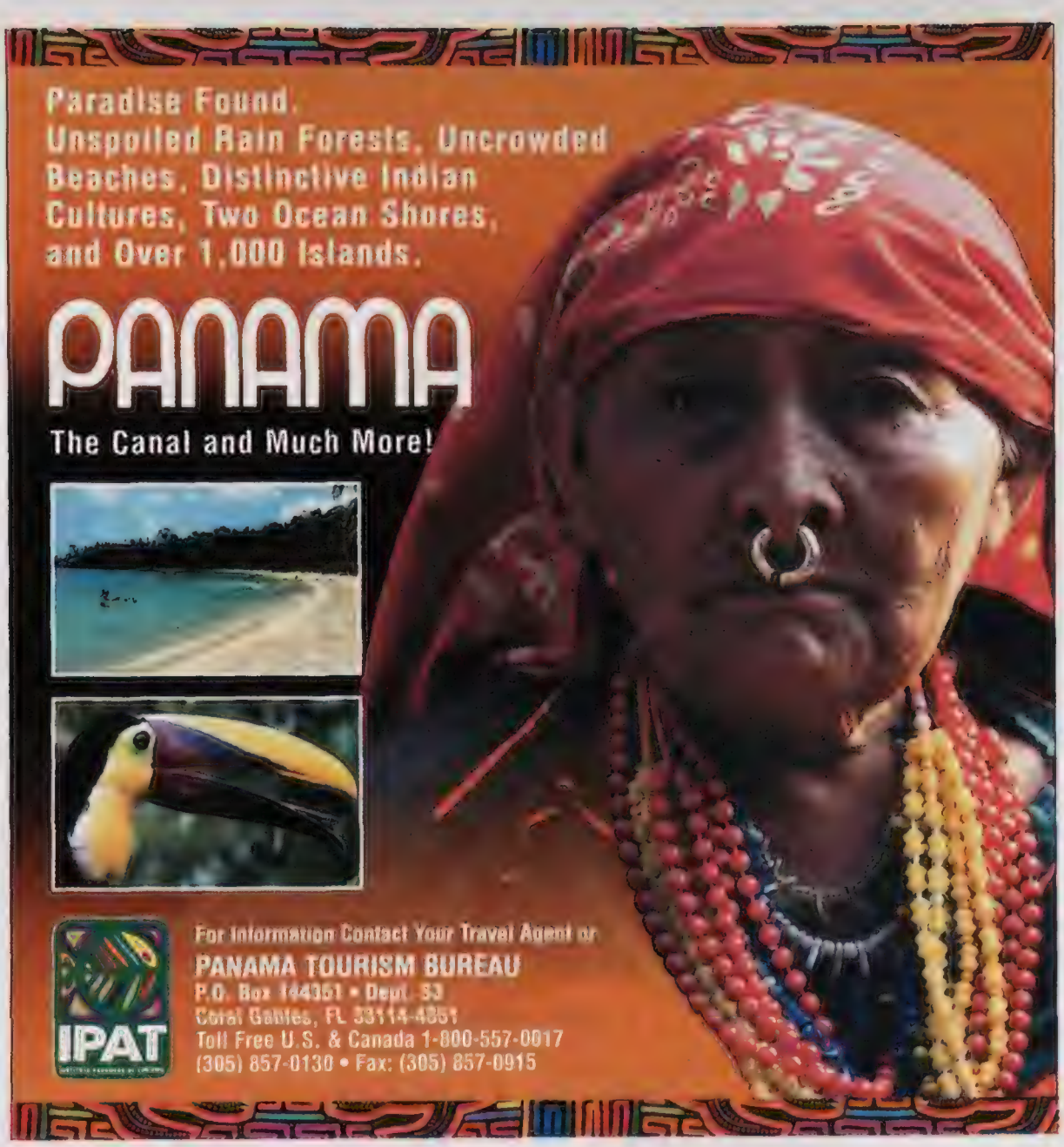
Interestingly, the U.S. Post Office Department announced new conversion rates for international postal reply coupons less than a week later—the first change in the rates since prewar days, the *New York Times* reported. Officials insisted that the new rates had nothing to do with Ponzi's scheme. However, they also insisted it was impossible for anyone

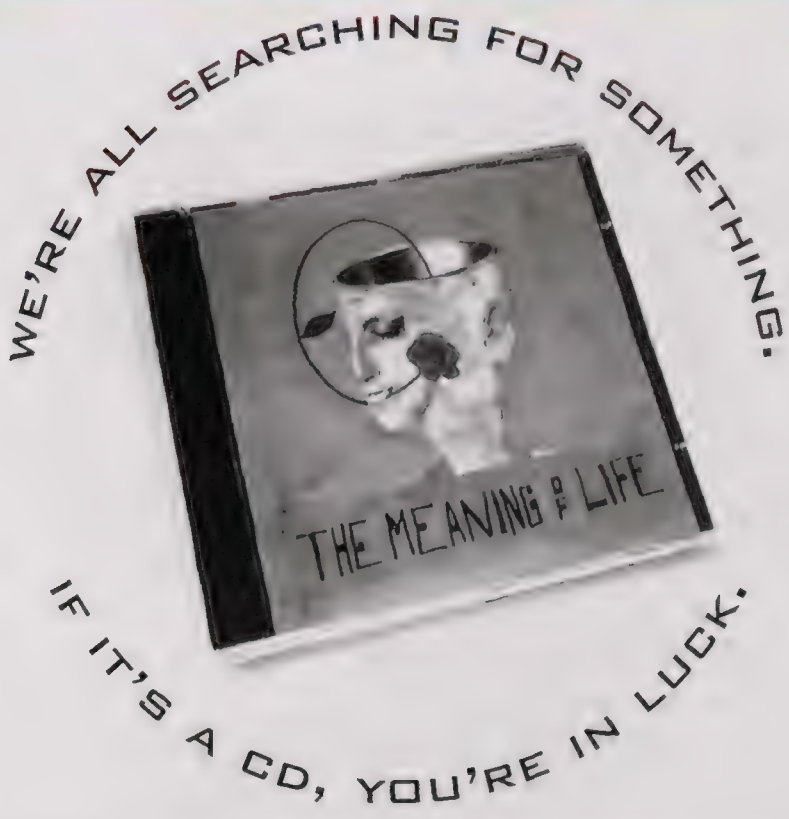
TRUSTEES OF THE BOSTON PUBLIC LIBRARY

to do what Ponzi claimed to be doing. (Postal authorities today say the same thing: although international postal reply coupons are available at post offices where there is a demand for them, regulations make speculation in them impossible.)

The tide turned quickly against Ponzi. He had come under investigation by postal and legal authorities as early as February, but they appeared to be making little progress in their efforts. Meanwhile, the editors at the *Boston Post*, possibly chagrined at having published the article that injected so much momentum into Ponzi's enterprise, launched an investigation into his business. The bad press enraged Ponzi. At the advice of his publicity agent, a former newspaperman named William McMasters, Ponzi offered to cooperate with the U.S. District Attorney's office by opening his books to a government auditor and declining to accept new investments, as of noon that day, July 26, until the audit was complete.

Word that Ponzi was closing his doors prompted a huge run, as thousands stormed School Street to


Paradise Found.
Unspoiled Rain Forests, Uncrowded Beaches, Distinctive Indian Cultures, Two Ocean Shores, and Over 1,000 Islands.
PANAMA
The Canal and Much More!
IPAT
For Information Contact Your Travel Agent or
PANAMA TOURISM BUREAU
P.O. Box 144351 • Dept. 33
Coral Gables, FL 33114-4351
Toll Free U.S. & Canada 1-800-557-0017
(305) 857-0130 • Fax: (305) 857-0915



The truly big questions in life often require the help of a guru. Questions like, "where can I find rare CDs?" That's why EveryCD has music experts just a phone call away who can help you find virtually any CD in print — at up to 30% off list. EveryCD has no minimum order and you'll never receive an unsolicited disc. The trial membership is even free. Visit our Web site. Or better yet, call today, and make our lives worthwhile. ***1-800-EVERY-CD. We hear you.***

www.everycd.com

THE COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF THE DISTRICT ATTORNEY
COUNTY OF SUFFOLK
BOSTON, MASS.

JUNE 15, 1926.

WANTED ON INDICTMENT

FUGITIVE FROM JUSTICE: Charles Ponzi, alias, Charles Ponci, alias, Carlo, alias, Charles P. Bianchi.

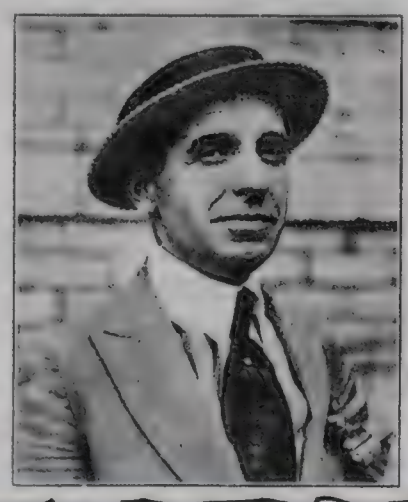
OFFENCE. Larceny in two counts:
July 8, 1920. One thousand dollars ($1,000) in money.
July 16, 1920, Six hundred dollars ($600) in money, the moneys of Fritz W. Bodenstab.

CRIMINAL RECORD.

United States Penitentiary, Atlanta, Ga., October 13, 1910. Smuggling in aliens.

Penitentiary, Montreal, Canada, forgery, 3 years.

Plymouth Jail, Plymouth, Mass., 1920, illegal use of United States mails.



DESCRIPTION.

44 years of age.
Height, 5 feet 2 inches.
Born in Italy.
Weight, 130 pounds.
Hair, dark chestnut, mixed with grey.
Eyes, brown.
Occupation, thief.

In 1926, Ponzi was appealing a fraud conviction for selling swampland in Florida (above) when he lost his appeal in Massachusetts and jumped bail.

redeem their investment vouchers. Ponzi directed his clerks to refund the money of everyone who presented a voucher. On one day, the *Post* reported, Ponzi paid out more than $1 million. Frightened investors who cashed in their chips early got back only their principal, which, Ponzi noted, saved him considerable interest.

Ponzi maintained a cool head. He played games with the authorities—on the one hand appearing to cooperate with them, and on the other snubbing them to talk to reporters, who provided daily coverage of the unfolding drama. "'POSTAGE STAMP' KING DEFIES FEDERAL GOVERNMENT TO LEARN HOW HE PROFITS," the *Washington Post* reported on July 30. In the article, Ponzi shrugged off the notion that he was under any obligation to reveal details of his business dealings to officials. "My secret is how to cash the coupons. I do not tell it to anyone," he asserted. "Let the United States find it out, if it can."

As the run continued, Ponzi ordered up sandwiches and coffee to be distributed to the mobs of people waiting outside his office. He directed that women be moved to the front of the line, after hearing that several had fainted in the sweltering summer heat. Uncertain whether he was a crook or a hero, the crowds simultaneously booed and cheered him. Many people changed their minds while waiting to turn in their vouchers, convinced that their investments would pay off in the end. The *Boston Post* reported how one man proclaimed Ponzi "the greatest Italian of them all." With false modesty, Ponzi pointed out that Columbus had discovered America and that Marconi had discovered the wireless. "But Charlie," the fan replied, "you discovered where the money is!" Meanwhile, speculators in Ponzi's hire bought up notes at a discount from the worried, Dunn reports.

The investigation slogged on. "OFFICIALS BALKED BY PONZI PUZZLE," the *Boston Post* observed. Then, on August 2, the *Post* dropped a bombshell after enlisting the cooperation of McMasters, Ponzi's erstwhile publicity agent, who wrote a copyrighted, first-person report in which he proclaimed Ponzi "hopelessly insolvent." "He is over $2,000,000 in debt even if he tried to meet his notes without paying any interest," McMasters declared. "If the interest is included on his outstanding notes, then he is at least $4,500,000 in debt."

Still, McMasters found it difficult to condemn the little financier: "No wonder Ponzi is confident: He sees an apparently unlimited pile of cash . . . the public dippy about him . . . and Wall Street 'experts' who never did anything like it themselves offering 'sure-thing' explanation of his 'operations'—is it any wonder the thing has gone to his head?"

Note holders besieged the School Street office the day the McMasters article ran. Ponzi hotly denied the charges of insolvency, and threatened to sue both McMasters and the *Post*.

The public circus escalated. On August 10, Ponzi gave a luncheon address at Boston's Hotel Bellevue for the Kiwanis Club, which had invited him for a "battle royal" with a mind reader named Joseph Dunninger. The idea was that Dunninger would "throw the X-ray of clairvoyance on the subtle brain of the little Italian and reveal what he found to the audience," the *Boston Globe* reported. But the spectators were so enthralled by Ponzi that the contest apparently never came off; at 2:45, Ponzi was still fielding questions from the audience.

Ponzi audaciously implied that he dealt directly with foreign governments in order to purchase the vast quantities of coupons needed to support his enterprise. Because the governments from whom he bought coupons profited themselves, they "naturally would not care to reveal" the exact nature of their business, he explained. "PONZI TELLS KIWANIS CLUB HOW HE GOT HIS MILLIONS," the *Globe* shouted from its front page. Editors at the *Chicago Tribune*, which also reported on the Kiwanis Club affair, were more skeptical: "PONZI REVEALS PHILOSOPHER'S STONE: 0+0=$," the headline ran.

On August 11, the *Boston Post* made the sensational revelation that the financial wizard was a former jailbird, having served time (1908-10) in Canada for forging checks. The article, the result of the *Post's* own investigation, ran complete with mugshots of Ponzi from Montreal police. Later, it was learned that Ponzi had served another term in a federal prison in Atlanta for smuggling five Italians from Canada into the United States.

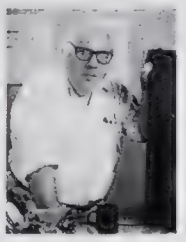
The next day, Edwin Pride, the government auditor, concluded his examination of Ponzi's books. He found Ponzi to be $3 million in the red (he later revised it to $7 million). Ponzi was placed under arrest. "PONZI WEARING HIS SMILE EVEN IN EAST CAMBRIDGE JAIL," the *Boston Evening Globe* reported. "The man's nerve is iron," his jailer marveled.

Half-a-dozen banks crashed in the aftermath of Ponzi's fall. His note holders received less than 30 cents on the dollar; many investors held on to their notes, clinging desperately to the belief that their hero would somehow come through, Dunn says. For its relentless reporting, the *Boston Post* won a Pulitzer Prize.

Ponzi was convicted on federal charges of using the mail to defraud. He served 3½ years and was paroled. In 1925, he was convicted on state fraud charges. Out on bail while the

The World's Best-Sounding Radio?

Model 88. Designed By Audio Hall Of Fame Member And Emmy Award Winner Henry Kloss.



In 1960 Henry Kloss changed how the world listened to music when he introduced the first high-fidelity FM table radio – the KLH Model Eight. The new *Model 88 by Henry Kloss*™ once again redefines how we listen to music.

Model 88 combines a remarkable AM/FM tuner, advanced electronic design, component-quality amplifiers and a speaker system that in-cludes a built-in powered subwoofer. It's designed to play music and make it sound like music... natural and lifelike, including *great* bass. It is, we believe, the best sounding table radio in the world.

Model 88 includes a slim, easy-to-use remote control. It is backed by our 30-Day Total Satisfaction Guarantee. And best of all, it sells for only $199.99.

The Performance And Flexibility Of A Component Audio System.

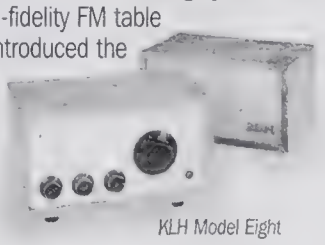
Model 88 is the first table radio that sounds like a good component audio system. That's because it uses high-performance speakers and amplifiers – including a powered subwoofer! Two-thirds of *Model 88*'s cabinet serves as the enclosure for a four-inch long-throw subwoofer. It reproduces bass with remarkable accuracy and impact.

Model 88 also uses techniques like biamplification and electronic contouring (a technique pioneered by Henry Kloss) to create a natural, accurate octave-to-octave tonal balance over the entire range of music. And its AM/FM tuner outperforms even "high-end" receivers. *Model 88* even includes two sets of stereo inputs, so you can connect it to a CD player, tape deck, TV or computer.

We think *Model 88* sounds better than many component stereo systems. The *Hartford Courant* calls *Model 88* "a table radio to end all table radios."

Continuing A Tradition Of Performance.

Henry Kloss created a new category of audio product – the high-fidelity FM table radio – when he introduced the KLH Model Eight in 1960. He further refined the concept with the Advent Model 400 FM radio in 1974. Both the KLH and Advent radios became classics. If you'd like to hear the next classic from Henry Kloss, call our toll-free number or visit our website. We invite you to audition it in your own home, listening to your music, for 30 days. If you don't fall in love with it, return it for a full refund. Thanks for reading.



KLH Model Eight

Model 88
Introductory Price
Only $199.99

For a 30-Day Home Audition, call...

1-800-FOR-HIFI

(1-800-367-4434) Or visit www.hifi.com

CAMBRIDGE SOUNDWORKS®

Top Rated Audio...Direct To You From Our Factories.

311 Needham Street, Suite 135 Newton, MA 02464 Tel: 1-800-367-4434 Fax: 617-332-9229 Canada: 1-800-525-4434
Outside U.S. or Canada: 617-332-5936 © 1998 Cambridge SoundWorks, Inc. Retail Stores in San Francisco Bay Area & New England

Statement of ownership, management and circulation (required by 39 U.S.C. 3685) of Smithsonian published monthly at the Smithsonian Institution, 900 Jefferson Drive, Washington, D.C. 20560 for October 1, 1998. General business offices of the publisher are located at 900 Jefferson Drive, Washington, D.C. 20560. Name and address of publisher is Ronald C. Walker, 900 Jefferson Drive, Washington, D.C. 20560. Name and address of editor is Donald B. Moser, 900 Jefferson Drive, Washington, D.C. 20560. Owner is Smithsonian Institution, 900 Jefferson Drive, Washington, D.C. 20560. Known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages or other securities: None. The purpose, function, and nonprofit status of this organization and the exempt status for Federal income tax purposes have not changed during preceding 12 months (Section 411.3, DMM). The average number of copies of each issue during the preceding 12 months are: (A) Total number of copies printed: 2,167,375; (B) Paid circulation: (1) Sales through dealers and carriers, street vendors and counter sales: 8,584; (2) Mail subscriptions: 2,110,457; (C) Total paid circulation: 2,119,041; (D) Free distribution by mail: 8,515; (E) Free distribution outside the mail: 10,805; (F) Total free distribution: 19,020; (G) Total distribution: 2,138,061; (H) Copies not distributed: (1) Office use, leftovers, spoiled: 5,449; (2) Returns from news agents: 23,865; (I) Total: 2,167,375. Percent paid and/or requested circulation: 99.1%. The actual number of copies of single issue published nearest to filing date are: (A) Total number of copies printed: 2,095,332; (B) Paid circulation: (1) Sales through dealers and carriers, street vendors and counter sales: 8,507; (2) Mail subscriptions: 2,037,852; (C) Total paid circulation: 2,046,359; (D) Free distribution by mail: 8,820; (E) Free distribution outside the mail: 10,758; (F) Total free distribution: 19,578; (G) Total distribution: 2,065,937; (H) Copies not distributed: (1) Office use, leftovers, spoiled: 9,005; (2) Returns from news agents: 20,390; (I) Total: 2,095,332. Percent paid and/or requested circulation: 99.1%. I certify that all information furnished is true and complete.

(signed) Carey O. Randall
Associate Publisher, Administration

You don't have to leave your own country to find third-world poverty.

Just travel along the hillsides and down through the valleys where the Appalachian coal mines have been shut down. Sad, hungry faces of little children, like Amy's, will haunt you.

For just $21 a month, through Children, Inc., you can sponsor a girl or boy in desperate need. You can help provide food, warm clothes, health care, school needs. And maybe a toy or two. And we'll send you your child's story, address and picture.

Write or call, but please, don't look the other way.

Write to: Mrs. Jeanne Clarke Wood
Children, Incorporated, P.O. Box 5381
Dept. S12A8, Richmond, Va. 23220 USA

❑ I wish to sponsor a ❑ boy, ❑ girl, in ❑ Asia, ❑ Latin America, ❑ Middle East, ❑ Africa, ❑ USA, ❑ Greatest need.

❑ I will give $21 a Month ($252 a year). Enclosed is my gift for a full year ❑, the first month ❑. Please send me the child's name, story, address and picture.

❑ I can't sponsor, but I will help $ _____.

❑ Please send me further information.

Name

Address

City State Zip

❑ Check ❑ Am. Express ❑ Visa ❑ MasterCard

Card No. Expiration Date

Signature

1-800-538-5381

CHILDREN, INC.

Serving Needy Children Since 1964

U.S. gifts are fully tax deductible.
Annual financial statements are available on request.

verdict was under appeal, he headed for Florida to raise money by selling swampland under the name "Charpon." He was quickly arrested and convicted of fraud. He jumped bail when he learned that the Supreme Judicial Court of Massachusetts had upheld his conviction in that state. With authorities in two states in pursuit, Ponzi fled to Texas. He signed aboard as a seaman on an Italian

Ponzi, with a mustache and shaved head, was nabbed trying to flee the country.

freighter, but was captured in New Orleans. Ponzi was returned to Massachusetts to begin his sentence at the state prison in Charlestown.

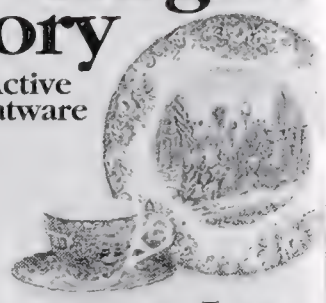
When Ponzi emerged from jail in 1934, balding and 40 pounds heavier, immigration authorities were on hand with a deportation warrant. He had never become an American citizen and was considered an undesirable alien. On October 7, after his appeals to remain in the United States were rejected, he was deported to Italy. Rose stayed on in Boston with plans to join him once he found employment, but after two years she tired of waiting and finally divorced him. For years, says Dunn, who interviewed her not long before her death, she was dogged by rumors that she had a secret stash of her husband's ill-gotten gains. But Rose was a victim herself: she and eight of her relatives had

World's Largest Inventory

Discontinued & Active China, Crystal, Flatware & Collectibles

- *100,000 Patterns*
- *5 Million Pieces*
- *Buy & Sell*

Call for **FREE** lists.



REPLACEMENTS, LTD.®
1089 Knox Road, Greensboro, NC 27420 Dept. SM
1-800-REPLACE (1-800-737-5223)
www.replacements.com

adventure **ALASKA**

truly unique 5 - 17 day small group journeys

• River Adventures • Combination Trips
• Sightseeing Tours • Wilderness Explorations
• Dog Sledding Trips • Natural History/Cultural Tours

(800) 365-7057 *P.O. Box 64 Hope, AK 99605* www.AdvenAlaska.com

NEW AUTHORS
PUBLISH YOUR WORK
ALL SUBJECTS CONSIDERED
Fiction, Biography, Religious, Poetry, Children's.
AUTHORS WORLDWIDE INVITED.
WRITE OR SEND YOUR MANUSCRIPT TO
MINERVA PRESS
2 OLD BROMPTON ROAD, LONDON SW7 3DQ, ENGLAND

PANORAMIC
PICTURE FRAMES

The widest selection of quality panoramic frames anywhere. Call or e-mail for free catalog
dharpohall@aol.com
$19.95 + $2.95 s/h **1•888•277•9400**

SNOWMAN PIN 1-1/2"

A jolly fellow from the Newport workshop of James Breakell. Sterling silver $40, 14k gold $340. Add $4 handling. Catalog available, (800) 767-6411
Web: breakell.com

J.H. Breakell & Co.
132 Spring Street, Dept. SSM, Newport, RI 02840

POLAR BEARS

The world's greatest gathering of polar bears occurs each autumn in Churchill, Manitoba. Join our naturalist guides on a Tundra Buggy or in the Tundra Bunkhouse Lodge for an unforgettable journey to see the Great White Bears.

From $1995, Oct. 1999 Departures
TravelWild Expeditions (800) 368-0077
or e-mail: **info@travelwild.com**
www.travelwild.com SM38

loaned Ponzi more than $16,000. After Ponzi's departure, Rose led a pinched and quiet existence, eventually remarrying after her husband's death and moving to Florida, where she tried to escape the notoriety of her former husband's escapades.

Accounts of Ponzi's life after his eviction from the United States vary. According to one version, he talked his way into a high-ranking financial ministry job in Mussolini's government. When officials realized that he was not the financial genius he purported to be, he fled carrying two suitcases stuffed with cash and caught a steamer to Brazil.

Dunn, who's done the most extensive research on Ponzi, uncovered a different story. He reports that Ponzi got help from his second cousin, Col. Attilio Biseo of the Italian Air Force, who was commander of the Green Mice Squadron and a friend of Mussolini's. Biseo landed Ponzi a job with a fledgling airline doing business between Italy and Brazil. This new career kept Ponzi in high style between 1939 and December 1941, when the United States entered World War II and the Brazilian government cut off supplies to Ponzi's airline, having learned that it was ferrying strategic supplies to Italy.

Out of a job, Ponzi scraped by, teaching English and French and later working as an interpreter for an Italian importing firm, according to Dunn. But his eyesight was failing and a stroke in early 1948 left him partially paralyzed. Ponzi died in a charity hospital in Rio de Janeiro on January 18, 1949, leaving $75 to pay for his burial.

Ponzi's proposition—that millions of dollars could be made from lowly postage stamps—was and remains patently absurd. But is it any more absurd than the promise of a $59,000 loan in exchange for $20 sent to a post office box in Las Vegas? Or the notion that, for an initial investment of $70 and a $50 per month fee, it is

Raising your quality of life by an extra hour a week.

We're proud to sponsor NOVA on PBS.
Check your local listings for times.

NOVA SEE IT ON PBS

Northwestern Mutual Life®
The Quiet Company®

Northwestern Mutual Life Foundation © 1998 The Northwestern Mutual Life Insurance Co., Milwaukee, WI • www.northwesternmutual.com

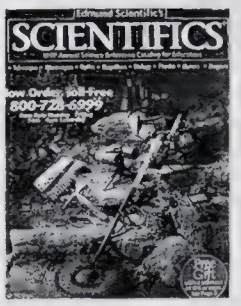
• Telescopes • Binoculars • Biology • Consumer Optics • Photography Accessories • Educational Science Toys • Geology • Telescopes • Binoculars • Biology • Consumer Optics •

Do you think of this as the Big Dipper?

Or, a conveniently placed marker for the M-51 galaxy?

The big picture comes into focus when you view it through the Astroscan® 2001. Its unique, cradle-in-your-arm design and ability to glide effortlessly in its table-top base make it extremely ideal for beginners. Plus, its amazing 3° field and superb light gathering capability make those panoramic views all the more memorable. Call **800-728-6999** for a free catalog.

Astroscan® 2001, pg 4
$329.00



Edmund Scientific
If you love science.

SCIENTIFICS CATALOG DIVISION
Dept. A981C916, 101 E. Gloucester Pike, Barrington, New Jersey 08007-1380
E-mail us at: scientifics@edsci.com

• Telescopes • Binoculars • Biology • Consumer Optics • Photography Accessories • Educational Science Toys • Geology • Telescopes • Binoculars • Biology • Consumer Optics •

Swim at Home™

Swim or exercise against a smooth current adjustable to any speed or ability. Ideal for swimming, water aerobics, rehabilitation and fun. The 8′ x 15′ Endless Pool® is simple to maintain, economical to run, and easy to install inside or outdoors.

FOR FREE VIDEO CALL
(800)233-0741, Ext. 351
or visit www.endlesspools.com
200 E Dutton Mill Rd, Dept 272
Aston, PA 19014
ENDLESS POOLS®

Authors Wanted

Successful, full service, subsidy publisher can transform your manuscript into an attractive, quality book — and promote it. Send your completed work for a no-cost, no obligation assessment — or request a free brochure.

Rutledge Books, Inc. • 1-800-278-8533
Dept. SM24 • P.O. Box 315 • Bethel, CT 06801

Give a Little
Tenderness!

Send Holiday Gift Packages of tender, juicy, world-famous Omaha Steaks at a low introductory price.
Delivered nationwide. Completely guaranteed.
Hurry…your gift orders must be received by December 19th for delivery in time for Christmas.

#515 8 (6 oz.) Filet Mignons & 6 FREE (4 oz.) Burgers — $49.99 Plus Shipping & Handling
Reg. 83.99 Save $34.00 ....Now Only

OR

#469 6 (5 oz.) Filet Mignons & 6 FREE (4 oz.) Burgers — $29.99 Plus Shipping & Handling
Reg. 54.99 Save $25.00 ....Now Only

This Special Introductory Offer Expires 12/31/98
• Limit of 2 at these special prices
• Standard Shipping & Handling just $9.99 per address

Mention #AF8120 To Get The Special Introductory Price!

PREMIUM HEARTLAND QUALITY
OMAHA STEAKS
SINCE 1917

Omaha Steaks, Inc.
10909 John Galt Boulevard • P.O. Box 3300 • Omaha, NE 68103
CALL 1•800•228•9055
www.omahasteaks.com 98124-G9008

possible to both contribute to charity and earn monthly returns as high as $89,700? Both these pitches were advertised on the Internet—and they both worked, at least for a while. Other successful schemes have featured offers of worthless distributorships for devices that access the Internet through TVs, unsecured credit cards and investment opportunities in deregulated electrical power.

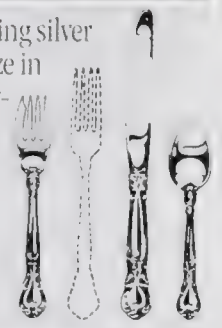
Why does anyone fall for such scams? "It's human nature," says Susan Grant of the National Consumers League. "The crooks know that there are basic human factors that they can appeal to—the desire to do what you think you see other people doing around you, making money and getting rich."

In other words, wishful thinking. In 1920, people saw Ponzi as a man who could make the impossible possible. Today, many people in search of lucrative investment opportunities "see the Internet as a place where all things are possible," observes Paul H. Luehr, who chairs the FTC's Internet Coordinating Committee. Sometimes, they simply can't tell the difference between a legitimate business enterprise and a hoax. But other times it's clear that they don't really want to know. Grant and Luehr tell of inquiries they've received from consumers in search of reassurance that an attractive scheme is legitimate. But when cautioned against it, they become angry. "Many times people are mad at the government for spoiling a 'good' investment opportunity," says Luehr.

Today's operators often use high-tech bells and whistles to lure their prey. Ponzi's approach was more charismatic. But the bait is always the same and the outcome is inevitable. Up to 95 percent of the people who buy into Ponzi schemes eventually lose all their investments, says Luehr. Generally, it is only the con man who gets the easy money. For Ponzi, there undoubtedly were other rewards as

MISSING A PIECE OF YOUR PATTERN?®

Replace pieces or add to your sterling silver at up to 75% off retail. We specialize in new and used flatware and hollowware. Over 1,200 patterns in stock. Call or write for a free inventory of your sterling pattern. *(We buy sterling silver, with a careful appraisal for maximum value.)*



Pattern shown: Chantilly by Gorham.

Beverly Bremer
SILVER SHOP
3164 Peachtree Rd., NE, Dept. SM, Atlanta, GA 30305 / Mon.-Sat. 10-5
404 261-4009

Visit us on the World Wide Web
World of Science®
www.worldofscience.com
Unique fossils, meteorites, minerals, and exciting cutting edge science and nature products

www.dallaspridgenjewelry.com
DALLAS PRIDGEN JEWELRY
One at a time, by hand

Santa Pendant
Sterling Silver $35
14K Gold $168

Christmas Tree Pendant
Sterling Silver $35
14K Gold $148

Unconditionally guaranteed 1·800·477·1856
PO Box 147 • Chapel Hill, NC 27514

SMALL SHIPS, BIG ADVENTURE
Exotic winter cruises in Belize, Panama, Caribbean and more.
Exclusive, smooth water, informal adventure.
It's like cruising on your friend's yacht.©

FREE BROCHURE 800-556-7450
www.accl-smallships.com
AMERICAN CANADIAN CARIBBEAN LINE

Chef'sChoice®
"The new Chef'sChoice® EdgeSelect™ Model 120 raises the standards of knife sharpening"
Craig Claiborne
FOOD CRITIC AND COOKBOOK AUTHOR

For a store in your area, call: (800) 342-3255.

well: excitement and power. Richard Ault, a retired special agent and criminal profiler for the FBI, speculates that, more than anything, Ponzi wanted to be "something special." A poor immigrant, he sought to become part of the Boston establishment that had excluded him, Ault believes. "It was an impossible goal, but he managed to achieve a little bit of it for a short period of time."

To Ponzi, it was all a grand, desperate game that he was determined to play to its conclusion. At the end, he had this to say about the mad caper on which he had led the people of Boston: "Even if they never got anything for it, it was cheap at that price. Without malice aforethought I had given them the best show that was ever staged in their territory since the landing of the Pilgrims! . . . It was easily worth fifteen million bucks to watch me put the thing over!"

To Charles Ponzi, who began with nothing, ended up the same way but enjoyed a brief interlude of power and fame, it undoubtedly was.

Mary Darby, a freelance writer in Washington, D.C., invests in mutual funds, and hopes not to lose her shirt.

Ponzi flashes a smile after leaving prison in 1934. He would soon be deported.

UPI/CORBIS-BETTMANN

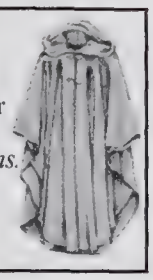
TURKEY
GREECE ISRAEL & JORDAN

Quality tours stressing History, Culture, Folklore, & People. Great food and Photography.

Bora Özkök's
Cultural Folk Tours Int'l
9939 Hibert St., Ste. 207
San Diego, CA 92131-1031
Registration #2011417-40

Call for a free brochure:
http://www.boraozkok.com/
1-800-935-8875
619–566–5951

Wool Capes

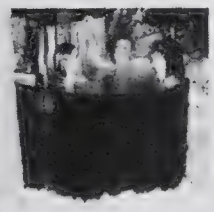


Made in Portland, Maine.100% Merino Wool. People love the warmth and the romance of our capes. **Free Catalog & Swatches.** *Plus: Hats, Shawls, Blankets, Scarves & other fine woolens.*
Casco Bay Wool Works
Free Catalog: **1-800-788-9842**
www.cascobaywoolworks.com

Cartouche

Capture the Power of the Ancients with this Magical good luck Talisman.
Your Name in Heiroglyphics.
18K Solid Gold & Sterling Silver.
•Protective Charms •Powerful Amulets
•Beautiful Gifts •Flower of Life
Catalog of Unique Imported Handmade Egyptian Jewelry & Gifts
For a Free Catalog Call
1-800-283-4978
P.O. Box 309-SM, Delmont, PA 15626
E-mail:SM@cartoucheltd.com

WOOD, WATER & FIRE
A RELAXING BLEND...



Selected cedar, still water and a warming fire...That's all you need to enjoy a relaxing soak in your Wood Fired Snorkel Hot Tub. Call for **FREE** information.
snorkel hot tubs
Snorkel Stove Company • Wood Fired Hot Tubs • S 98124
4216 6th Ave. S. Seattle, WA 98108 • **www.snorkel.com**
800-962-6208

Celebrate July 4th & All Events
CARBIDE CANNON
BIG BANG! $139.95

Mammoth Cannons shoot with terrific BANG! Have a bang-up time at special events. Uses powdered carbide ammo. Hundreds of shots for few cents. All metal construction with large, rugged cast iron wheels. Machined brass mechanism for easy loading and firing. Authentic turn-of-century design. Handsome decor when not in use. Made in USA to last a lifetime. Available in 3 sizes: 9" cannon, **$59.95 postpaid;** 17" cannon, **$109.95 postpaid;** 25" cannon (shown here) with rapid firing and automatic loading, **$139.95 postpaid.** The larger the cannon the louder the bang! **Carbide ammo, about 100 shots, $7.50; 3-pack $18.00. Spark plugs, 3-pack $2.00.** Send check, money order or call. Visa, MasterCard accepted by mail or phone. Give card number & expiration. Money-back guarantee. Send for **FREE CATALOG!**
The Conestoga Co., Inc., Dept S, PO Box 405, Bethlehem, PA 18016
★★ **Call 1-800-987-BANG** ★★
www.bigbangcannons.com

THE LATEST IN WEATHER TECHNOLOGY

Davis Instruments, the world leader in affordable, professional-quality weather stations, has expanded its weather line to include the ***GroWeather®*** and ***EnviroMonitor®*** systems. All stations track rain, temperature, humidity, barometer, wind speed and direction along with alarms, highs, and lows. Optional data logger/software stores, graphs, and tracks data collected by station.

GroWeather

Finally, an advanced weather station that helps you manage pest control, irrigation, and crop development. GroWeather calculates evapotranspiration, growing degree-days, and over 70 other values.

Energy EnviroMonitor

Now you can evaluate and manage your energy needs more efficiently. Energy EnviroMonitor tracks heating, cooling, and wind-chill degree-days, solar radiation, and wind run.

Health EnviroMonitor

It's never been easier to monitor the weather conditions that lead to sunburn, skin cancer, or hypothermia. Health EnviroMonitor displays heat stress, wind-chill, UV intensity and UV dosage, and solar radiation.

SMI1298

M-F 7 a.m. to 5:30 p.m. Pacific Time
FAX 1-510-670-0589
M/C and VISA • One-year warranty
30-day money-back guarantee •

For more information and a free catalog, call
1-800-678-3669

Davis Instruments
3465 Diablo Avenue, Hayward, CA 94545-2778 • www.davisnet.com

Washable Sheepskin Slippers & Boots
Aussie Connection
135 NE Third Avenue
Hillsboro, OR 97123
1-800-950-2668
for a FREE Catalog
www.aus-slippers.com

Celtic Chi-Rho Necklet

From our extensive Celtic jewelry collection, a necklet simply executed in gold or silver. Shown full size.

No. 3221Ng Chi-Rho Necklet, 14 kt. gold, chain not included $130.00
No. 2310 14 kt Gold Wheat Chain, 18" $115.00
No. 3221N Chi-Rho Necklet, Sterling silver, 18" sterling chain $30.00

Add $5.00 for handling. Check, M/C, Visa or Amex.
Satisfaction Guaranteed.
Send for our unique catalog.
1-800-324-4934
9 a.m.–5 p.m. Pacific Time Monday–Saturday
www.davidmorgan.com
Visit our store in the Seattle area.
David Morgan
11812 North Creek Pkwy N, Suite 103, Bothell, WA 98011

Vast treasure, fast ships and cutthroat rivals await you on the seas of **Pirateer**,® the fast-paced strategy game where fortunes turn on pirate skullduggery and a roll of the dice. Easy to play, yet challenging for all ages, this award winning mix of luck, skill and treachery will entertain your family for years. Our twentieth anniversary edition includes a colorful fabric game board, solid playing pieces, gold coin, suede pouch and illustrated instructions in a beautiful embossed tin. **$24.95** plus shipping.

1-800-962-4224
Mendocino Game Company
P.O. Box 1339, Fort Bragg, CA 95437
(707) 964-0135 • (707) 964-7367 fax

NATIONAL COMPETITION WINNER mensa select

VISA

Find your nearest retailer!
http://www.pirateer.com

GALÁPAGOS

You, eleven other adventurers and our licensed naturalist will explore more islands by yacht than any other Galápagos expedition. 60 trip dates. Machu Picchu and Peru options. Free video and brochure.

INCA *(Inca Floats, Inc.)*
1311-S 63rd Street, Emeryville, CA 94608
510-420-1550 incafloats@aol.com

Dinosaurs
Solid Pewter Miniatures and Belt Buckles

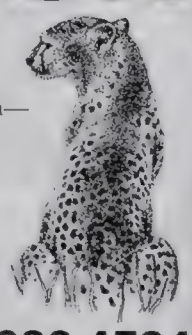
Amazing Detail!

Only $9.95 / $13.95
Order Yours Now!
1-800-345-1107

Free **Catalog**
www.rluther.com

AFRICA

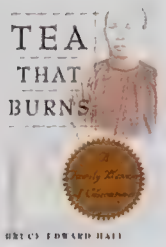
Wildlife safaris in South Africa, luxury tented camps in Kenya & Tanzania, gorilla treks in Uganda—experience a new standard in African safaris with the World Leader in Nature Travel.



INTERNATIONAL EXPEDITIONS INC

800-633-4734

nature@ietravel.com • www.ietravel.com



Tea That Burns: A Family Memoir of Chinatown

Bruce Edward Hall

Free Press, $25

BRUCE EDWARD HALL, WHO DESCRIBES himself as a "Chinese-Scottish Protestant," turns to the Chinese side of his family in *Tea That Burns,* a memoir of New York's Chinatown so named for the teapots filled with bootleg Scotch that were as common as teapots filled with tea in Mott Street's all-night restaurants during Prohibition.

"Chinatown was the only constant in my life," Hall explains, " . . . the only spot to which I could always return to familiar surroundings and see the thumbprints of generations that had died before living memory." It was there, in "a place that America hadn't homogenized out of existence," a place where he could "almost smell the beginning of time," that the author discovered "generous doses of magic, and poetry, and the exquisite, mystical beauty which was never to be found in the bland, white-bread towns of my youth. . . . Our house," he notes wryly, "*was* the ethnic neighborhood in Madison, Connecticut."

Against a backdrop of Tong (transplanted Cantonese gangs) wars and truces, festivals and feasts, opium dens and mah-jongg games, the reader follows the inevitable Americanization of the Hor family—which, for obvious reasons, changed its name to Hall in 1950. There is Great Grandfather Hor Poa, who arrived in the United States in 1873 with a queue he wouldn't cut for 22 years and a wife whose feet were bound—"two fists of flesh, with seemingly one toe each."

Grandfather, known by all as Hock Shop, earned a reputation as Chinatown's preeminent bookie. "To stop the Chinese from gambling would be like stopping the Chinese from eating," the author notes. By the age of 17, Hock Shop had already "developed the suave swagger that would distinguish him for the rest of his life. He liked sharp suits, good cigars, and a stiff drink with his buddies."

Hall's father, the youngest of Hock Shop's five children, went with his siblings to be raised by an aunt in Brooklyn when his mother died. At the age of 3, "he takes the first step on his long march away from the ancestral neighborhood," writes Hall of his father. Unlike his son, "he will not often look back."

Auntie didn't want him to. She insisted that the children speak English—and proper English. When Hall's father was 10, Auntie sent him to speech class to get rid of his Brooklyn accent. "He emerges," writes Hall with typical dry humor, "sounding like Edward R. Murrow."

For a boy who grew up in suburban Connecticut with a father who is an "Episcopalian, golf-playing junior corporate executive with the beautiful blonde wife" and a penchant for Kelly green pants and dry martinis, Hall is able to make Chinatown as vividly real to the reader as if he'd lived there since the time of his great-grandfather.

With affection rather than mockery, the author describes the superstitions that are a way of life for these gentle people—gentle when they're not involved with one Tong war or another. Explaining the goldfish tank at the top of the staircase at a restaurant called the Port Arthur, the "Best Restaurant that Ever Was"—unfortunately gone today—Hall writes, "Goldfish weren't, and still aren't, merely decorative. They keep out the evil spirits who, as all the world knows, have a tendency to rush

through doors and straight up staircases to wreak havoc with whatever is found at the top, like sleeping children—or cash registers."

Those same lurking and demonic spirits are the reasons that Chinatown's "tiny lanes squirm around in curves and sudden, switchback turns, because, of course, evil spirits can only travel in straight lines and so will come to grief against a wall before crossing some family's threshold."

Food finds its way frequently onto the pages of Hall's book—not surprising since eating is the "principal Chinese means of celebrating any conceivable event." Explains Hall, "China's, after all, was a culture where the natives greeted each other not with 'Hello,' but with 'Have you eaten yet?'"

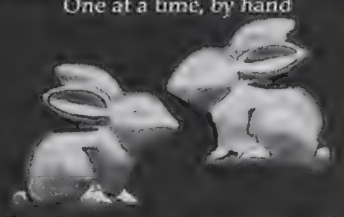
He tempts the reader with descriptions of "delectable steamed sea bass, and savory duck, and crabs, and spare ribs, and platters full of lobsters dripping in black-bean sauce."Along the narrow serpentine lanes of Chinatown at the turn of the century there are "fishmongers with live eels writhing in shallow tanks. In the butchers' windows hung geese and

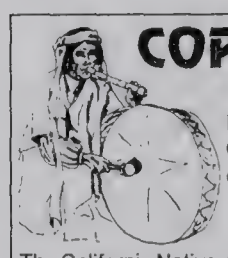
The gambling den became a fixture of everyday life in New York's emerging Chinatown; here, players at a gaming table try their luck at fan-tan, c. 1870.

This Christmas give her a gift that doesn't even

– remotely resemble a small household appliance. –

Introducing the Prelude™ collection of writing instruments from Sheaffer with finishes ranging from precious metals to rich matte colors and lustrous lacquers. Each adorned with a clip and trim of 23K gold electroplate and delivering an equally brilliant writing experience typically found in more expensive pens. Select from the surprisingly affordable fountain pen, roller ball, ballpoint or pencil with lifetime guarantees. For the store nearest you call 1-800-FINE PEN.

www.dallaspridgenjewlry.com
DALLAS PRIDGEN JEWELRY
One at a time, by hand

Rabbit Earrings *Sterling Silver $70 • 14K Gold $225*
Unconditionally guaranteed 1·800·477·1856
PO Box 147 • Chapel Hill, NC 27514


COPPER CANYON
Costa Rica and More
Explore Mexico's Copper Canyon and Costa Rica on our deluxe escorted and custom adventures. For free newsletter:
1-800-926-1140
www.calnative.com
The California Native, 6701 W. 87 Pl, Los Angeles, CA 90045

SWISS ALPS
Our 22nd Year- Optional length day hiking- Two guides per tour allow you to choose a moderate or more strenuous hike each day- Basing weekly in charming mountain villages in family run inns- Please call for free color brochure.
ALPINE ADVENTURE TRAILS TOURS
Toll Free: 888-478-4004
www.swisshiking.com
swissair

AFRICA • CHINA • INDIA • JAPAN • NEPAL • SRI LANKA • TAIWAN
Since 1989
UPTON TEA IMPORTS
Purveyor of the World's Finest Teas
1-800-234-8327
www.uptontea.com
Free catalog listing over **220** varieties of garden-fresh, loose tea
231 South St. * Hopkinton, MA 01748

Tibet, Nepal, Bhutan
Distinctive Journeys to Asia, Africa, the Americas, Europe, & Antarctica
GEOGRAPHIC EXPEDITIONS™
(800) 777-8183
www.geoex.com CST#1006401-10

European Beret $10
100% Wool • One Size Fits All
Black, Navy, Brown, Red, Camel, Grey
Check or Credit Card w/Exp. Date.
Add $2 Shipping Per Order
John Helmer • Est. 1921 • (503) 223-4976
969 S.W. Broadway, Dept. S128 • Portland, OR 97205

PERSONALIZED
CARTOUCHE JEWELRY
Your name translated into Egyptian hieroglyphics.
HANDMADE IN EGYPT
18K Gold from $150
Sterling Silver $40 • S/H $4.00
TO ORDER CALL,
1 (800) 447-2504
VISA • MC • AMEX
FREE BROCHURE
LITTLE EGYPT IMPORTS
P.O. Box 32977
Spells "Mary" Kansas City MO 64171 Spells "Lisa"

ducks and strips of sweet roast pork, dark red and juicy. And in every store, the household god presided with sticks of incense and a benevolent smile. It was a place where the smell of perfume and pig snouts filled the air." It could be a place of humiliation as well. Lots of it. The popular image of the Chinese at the time—"little brownies" as some called them—was that of "sinister gamblers and opium fiends, white slavers and purveyors of illicit puppy meat." As recently as 1932 at the public high school, Hall writes, "teachers will make a Chinese girl stand in front of the class to illustrate her 'Mongolian' characteristics with a pointer—straight hair and a 'nonexistent nose.'" Even the author is subjected to the taunt of "Ching-Chong-Chinaman!" from his grade school classmates in suburbia, "despite the fact that I don't look particularly Chinese."

During World War II, when the Chinese community protests plans by America (then still a neutral country) to send steel to the Japanese, arguing that they will use it to make planes with which to attack us, Hall writes, "the generals in the War Department in Washington just chuckle to themselves. Everybody knows that with their little slanted eyes no Orientals could ever see well enough to fly a fighter plane. On December 7, 1941," he notes wryly, "the War Department reassesses that assumption."

Hall's narrative soars with his descriptions of the annual succession of joyous parades and celebrations that are the life and breath of Chinatown. Describing a New Year's parade, he writes, ". . . the Lion appears, his long, twisting body trailing out behind that huge brilliantly-colored head, both frightening and fantastic with its rolling eyes, his flowing mane, and his snapping jaws ready to consume money offered by store owners eager to have the beast come and frighten those evil spirits away for another year. . . . Maybe," recalls

MOVING?
If you are moving soon, please send an address label from a recent issue along with your new address to:
Smithsonian
Membership
Data-Center
P.O. Box 420312
Palm Coast, FL
32142-0312
or call:
1-800-766-2149

NEW YORK'S FAMOUS
FULTON STREET
NY LOBSTER & SEAFOOD CO. INC. NY
4 Gourmet Lobster Tails $29.95
Makes a great gift! Plus S&H
Call Toll Free 24hrs. 1-888 LOB-TAIL
WWW.1888LOBTAIL.COM

REMINGTON BRONZES
World's Largest Wholesale Bronze Supplier

Apx. Size	Avg. Ret	Outlet$
Desk 9"	$495	$75
Med. 12"	$795	$95
Large 22-29	$1,295	$275
Coming Thru Rye 12"	$1,195	$425

For FREE FLYER, call: 609-652-5730
BRONZE OUTLET

EXPLORE THE WORLD
Small groups led by naturalists & historians to fascinating and remote areas.
800-628-8747
www.zeco.com
ZEGRAHM EXPEDITIONS

BUFFALO RANCHING makes good ecological sense for the American prairie. Please write or call for free catalog of a full range of buffalo products to:
Thundering Herd Buffalo Products
PO Box 1051, Dept.SM12
Reno, NV 89504
1-800-525-9730

PUZZLE ART
Heirloom quality, intricately handcut wood jigsaw puzzles personalized with silhouettes & messages.
$135 and up
Call or write for free catalog:
(612) 827-5757
Dept. S83, 4255 Garfield Ave.
Minneapolis, MN 55409-1858
http://www.rainylakepuzzles.com
Rainy Lake PUZZLES

French Country Vacation Rentals
⚜ Dordogne, Provence & more
⚜ Cottages, farmhouses & villas
⚜ Expert, personalized service
AT HOME IN France
541-488-9467
www.athomeinfrance.com

PACIFIC AIRCRAFT
THE COLLECTOR'S CHOICE
Makers of Fine Aerosculptures
Hand carved from solid mahogany. Exquisitely hand painted markings and details. • Museum quality
• Sizes 16" to 22"
• Stand included
• From $99.50
• Over 250 Models
Satisfaction Guaranteed

CALL (800) 950-9944 FOR CATALOG AND ORDERS
14255 N 79th Street, Scottsdale, AZ 85260
Phone (602) 991-1841 • http://www.warplanes.com

Hall, "the father lets the small son approach the rearing, snorting creature and reach up a hand, trembling with terror mixed with delight, to feed that gaping mouth a red envelope filled with coins. A lunge, a snap, and the money is gone, while the little boy squeals in pure pleasure."

At the beginning of his remarkable book, Hall writes, "This is a *tactile* history. I want the reader to be able to know what it felt like to live in Chinatown through the years, what it looked like, what it *smelled* like." This reader certainly did.

Reviewer Emily d'Aulaire writes from her home in Connecticut.

Red-Tails In Love: A Wildlife Drama In Central Park

Marie Winn

Pantheon, $24

IN MARIE WINN'S *RED-TAILS IN LOVE*, dedicated birders obsess over a hawk's love life. Predictably, eggs become elements of the unfolding plot. So do flying lessons. But Winn's tale has a twist: these particular raptors often eviscerate their prey—mostly pigeons and rats—on Woody Allen's penthouse patio. The biophobic comedian-director once wrote, "I am two with nature." Now he must clean up entrails.

This book covers several years, as a red-tailed hawk dubbed Pale Male (SMITHSONIAN, November 1995) finds a mate, loses her, finds another, and then . . . It is a finale that cries out for violins. En route, you cheer on Pale Male and his mates as they struggle to become the first red-tailed hawks to raise young on a building amid Manhattan's honking and fumes.

But this book is also about Central Park's fields, woodlands, ponds, lamp-lined walkways, stone bridges, joggers, Roller-bladers, drug addicts, nannies, dog walkers, soccer players, and the surrounding high-rises. And

Celebrate the Memories with The Gift of Love.
The Gift of Love is a totally customized book handcrafted for you. Your priceless photographs, which commemorate special family occasions, are digitally reproduced and elegantly presented on heirloom quality archival paper. Each richly bound volume is hand stitched and rubbed to a fine patina.
Tel: 1.888.324.1244
Intelligent Marketing Co. LLC
90 Dingletown Rd. Greenwich Ct. 06830

OAXACA
The way you always imagined Mexico to be...
Spend 5 days/4 nights
in a 16th. Century Convent
For as little as $326* deluxe room
CAMINO REAL OAXACA
Call: 1-800-7Camino (1-800-722-6466)
and ask for our Oaxaca Magic
*Per person, double occupancy 12/20/98 to 4/10/99

Celtic Cross
1 3/4" Sterling silver $65
includes 24" silver chain
14K. Gold $485 (no chain)
1 1/8" sterling $40 with 18" chain
14K Gold with 18" chain $240
Walker Metalsmiths 800 488-6347
Box 706, Andover NY 14806-0706
Online catalog: http://www.celtarts.com

Goose down robe
Surround yourself in warm, light-weight elegance. Supersoft easy care cotton fabric. Contrasting piping, shawl collar and roll back cuffs. Fully guaranteed. Order cream, peach, bluette, coral, navy, burgundy or teal. Sizes XS, S, M, L. Regularly $160. **Sale $89.** Shipping and handling, $6.95.
Goose Down Slippers match robes in cream, peach, bluette, coral, navy, burgundy or teal. XS, S, M, L. Regularly $38. **Sale $22.** Shipping $4.95.
❑ Order by phone with MC or VISA, call 415/472-2154.
❑ Use MC, VISA or check for mail orders.
CA residents add 7.25% tax
WARM THINGS
180 Paul Dr., Dept. SO/San Rafael, CA. 94903
415/472-2154 • Ship within 48 Hrs. • MC/VISA

SILVER SLED
James Breakell's perfect replica of an old fashioned wooden sled to pin or to hang. In sterling silver $40. 14k gold $295. Add $4 handling. Satisfaction guaranteed. Catalog available (800) 767-6411.
1 1/4"
J.H. Breakell & Co.
132 Spring St., Dept. SMSS, Newport, RI 02840

PERSONALIZED CARTOUCHE JEWELRY
HANDMADE IN EGYPT
Translate Anything into Ancient Egyptian Hieroglyphics
18k Gold and Silver Pendants, Rings and Bracelets
Call us for a free brochure and more information
Discoveries Egyptian Imports
2910 Business Center Dr. · Dept SM · Alexandria, Va. 22314
or visit our website at:
"Love" http://www.egyptianimports.com
DISCOVERIES EGYPTIAN IMPORTS
1-800-237-3358
Celebrating our 18th year!

DALLAS PRIDGEN JEWELRY
One at a time, by hand
"Pigs" Bracelet.
14K Gold $595, Sterling $165, Pin or Pendant 14K Gold $95, Sterling $35. Visa/MC/Amex
Unconditionally Guaranteed. 1-800-477-1856
PO Box 147, Chapel Hill, NC 27514 (919) 933-5759

CELTIC RINGS
RK 2 Sterling Silver $40
14K Gold $225 - $290
Walker Metalsmiths
800-488-6347
One Main St., Andover, N.Y. 14806

FOLK ART & LORE
Looking for a unique holiday gift from around the world?
www.folkartlore.com

THE POKE BOAT®
IT'S EVERYTHING A CANOE ISN'T.
A canoe is tippy. A Poke Boat isn't. It's remarkably stable.
A canoe is hard to turn and difficult to keep in a straight line. A Poke Boat isn't. It stays in a straight line, yet is easy to maneuver.
A canoe is heavy. A Poke Boat isn't.
It weighs only 22 pounds - built with aircraft strength.
You can buy more than a canoe.
For more information, give us a call.
606-986-2336.

the book is about the Regulars, a loose band of New Yorkers who make dawn park stops, some of them before work, for a spot of birding.

Bird-watching in Central Park sounds quixotic. But Winn tells us that the 843 acres of mid-Manhattan greenery is actually a birding hot spot. Since 1886, identified bird species in the park have doubled, in 1996 hitting 275, putting it on a list of the 14 best birding spots in the United States, along with Yosemite and the Everglades. Frederick Law Olmsted designed Central Park, says Winn, as a place where urbanites could "enjoy the illusion of wilderness without any of its inconveniences or dangers." But now, with budgets skimpy, the peacocks and rhododendrons are gone and Central Park is turning shaggy. Raccoons and woodchucks and cottontails have moved in. So have butterflies, dragonflies, crickets, turtles and frogs. And the park attracts enough birds to give springtime migration watchers "warbler neck" from gazing upward through binoculars. These days, says Winn, "the binocular band easily outnumbers the criminals in Central Park—at least on a fine day in May." And, she says of Olmsted's ersatz wilderness, "the former fake has begun to turn into the real thing."

Pale Male showed up in Central Park during Winn's first year as a Regular. Winn was not one of the group's Big Guns, or expert birders. She was a duffer. But she was soon making entries in the Register, where the park's birders note interesting sightings, often referencing the number of the nearest lamppost to guide others to the bird. One day, in the Register, a birder noted sighting a young male red-tailed hawk "eating a rat and also swooping a foot above shoveler ducks on the lake." Because this male was oddly pale, he was identifiable as an individual. Soon the birders were snooping on Pale Male's romances, cheering each aerial tryst.

Extraordinary Destinations
BOTSWANA: Private safari with ***Lynne Leakey.*** Visit delta, savanna, the Kalahari; Victoria Falls; S. African game preserve.
ARCTIC CANADA: Sail Great Slave Lake in crewed or bareboat yachts; or cruise the Mackenzie River in 20-passenger riverboat.
PAPUA NEW GUINEA: Stone age people; Sepik river & Irian Jaya cruises; primitive villages; rain forests, highlands & jungle.
GREENLAND: Musk ox, reindeer, whales, seals; Eskimo art & culture; Spectacular fjords & icebergs. Danish cuisine.
Details: 1-800-552-8546
Katlin Travel Group, www.katlintravel.com

COUNTRY WALKERS
20 Years of excellence in Worldwide Walking Vacations
• Europe, Africa, North & South America and the South Pacific
Free catalog call 800-638-0291
www.countrywalkers.com

The Newsletter for People Who Love Paris
PARIS notes
To order call tol. free
1-800-677-9660
www.parisnotes.com
publishing since 1992
current events, culture
history, restaurants
hotels, travel tips
$39 10x/yr

MittelEuropa Designs, Inc.
Czech Art Glass
Traditional and Contemporary
Call for a free catalog
1•888•3•PRAGUE
www.ARTCRYSTAL.com

Fine Arts Videos
Music • Art • Film • Culture • Gifts
FREE CATALOG
800-884-0555 ext. MA
www.karolmedia.com

AUTHORS WANTED
Leading subsidy book publisher seeks manuscripts. Fiction, non-fiction, poetry, juvenile, religious, etc. New authors welcomed. For free 32-page illustrated guidebook TD-72, call 1-800-821-3990 or write to:
Vantage Press, 516 W 34th St., New York, NY 10001

★ Schooner ★
KATHRYN B.
105 Feet of Luxury
Yesterday's Traditions • Today's Comforts
1-800-500-6077 • P.O. Box 133 • Hope, Maine 04847
MAINE SUMMERS • CHESAPEAKE AUTUMNS • CARIBBEAN WINTERS

Of course, the Regulars had other concerns. There was, for instance, the cutting down of the old tree where Baltimore orioles were nesting. One outraged Regular called the park's horticulture director from her office at Chase Bank, which led to a new park policy: look before you saw. There was the titmouse that was spotted plucking fur for its nest from an obliging raccoon's rump. There was the stampede to see the migrating loon that chose the park's reservoir for a rest stop. There was the sunrise-to-sunset vigil to observe the park's first nesting green herons. But the biggest deal was the red-tailed hawks, nesting on a high ledge of the Fifth Avenue building next to Woody Allen's.

Window washers worried the Regulars. They implored Mary Tyler Moore, one of the building's residents, to help keep the workers away from the nest. They fretted when the Disney movie *Pocahontas* premiered in Central Park, fearing the amplified noise and lights and hoopla would discomfit the hawk family. They set up a telescope on the sidewalk so passersby could view the nesting hawks, by now celebrities. Among the viewers was the actress Glenn Close, who declared, "It's a miracle," the third to make that particular pronouncement. A tourist from Marseilles simply cried, *"Incroyable!"*

Between the lines, this melodrama about nesting hawks is really about how wildness persists, even amid concrete and glass and jackhammering. It is about a tough town's politesse, giving the winged newcomers space, not getting in their face. And so it is a hopeful book. We learn that even urban sophisticates will trudge into the park in midwinter to put out seeds and suet. As one Regular said of the hawks, "Aren't we lucky to see this?"

Based in Vermont, Richard Wolkomir is a frequent SMITHSONIAN *contributor.*

MARITIME BRITAIN CRUISE
Explore coastlines, remote villages and spectacular wildlife sanctuaries in England, Ireland, Scotland & Wales — on the comfortable expedition vessel *Explorer.*
May 29-June 9, 1999 From $2995
Save $400 if you sign up by 11/30/98
TravelWild Expeditions (800) 368-0077
or e-mail: info@travelwild.com
www.travelwild.com SM37

Armchair General®
COLLECTABLE TOYS
Unique selections of new and old toy soldiers, cars, trains, airplanes, books, etc., from around the world.
COLOR CATALOG — 1-800-365-2498
ARMCHAIR GENERAL® LTD., DEPT. A
884 Woods Mill Road, Suite 201, St. Louis, MO 63011
Visit us at www.armchairgeneral.com

COPPER CANYON
SIERRA MADRE RAIL EXCURSIONS
Deeper than the Grand Canyon; cliff-dwelling Tarahumara Indians; mountain lodges in pine forests & historic hacienda hotels in tropical colonial towns. Customized daily departures.
OPEN MON-FRI 9 AM - 6 PM CT **1-800-843-1060**
COLUMBUS TRAVEL, 900 RIDGE CREEK, BULVERDE, TX 78163

Asia • Africa • Latin America • Polar Voyages
Exceptional journeys to the far reaches of the globe.
geo expeditions
Call Today
1 800 351-5041
www.geoexpeditions.com

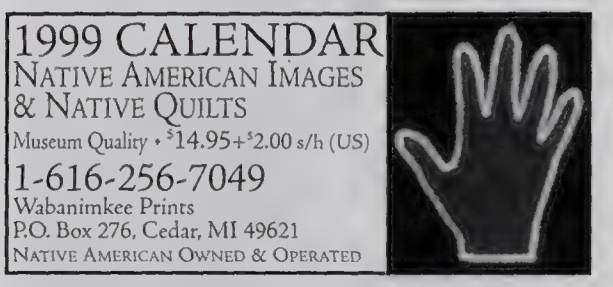
CELEBRATE THE CIRCLE OF LIFE
This original design embodies the continuum of life's joys and journeys.

Actual Size
THE ESSENTIA SPIRAL
18" Sterling Necklace $38.00
Also available in 14K gold
+4 shipping ~ Visa • MC • AmEx
Color catalog upon request
WWW.JANEFENESTRA.COM
1-888-252-7652
JANE FENESTRA JEWELRY
2200 Wilkerson Road ~ Bloomfield, KY 40008

LONDON FLATS
Short Term - Privately owned
PARIS PROPERTIES - COTSWOLD COTTAGES
THE LONDON CONNECTION
MR. THOMAS MOORE III
TOLL FREE PHONE: 888-393-9120
FAX: 801-393-3024
E:MAIL london@relia.net

The new Winter collection from The Cashmere Company.
52 pages of classic and contemporary knitwear in 100% pure cashmere made in Scotland. The highest quality cashmere at incomparable prices.
Call **TOLL FREE 1-800-707-1948** quoting **S1298** for your free brochure.
Fax: 011-44-1525 280884

Rome, Florence, Venice, Milan
Tuscany, Umbria, Sicily
Amalfi Coast, Lakes, Riviera
CARAVELLA ITALIA
Escorted tours of Italy in small groups.
For brochure: 888-665-2112 www.seeitaly.com


1999 CALENDAR
NATIVE AMERICAN IMAGES & NATIVE QUILTS
Museum Quality • $14.95+$2.00 s/h (US)
1-616-256-7049
Wabanimkee Prints
P.O. Box 276, Cedar, MI 49621
NATIVE AMERICAN OWNED & OPERATED

Juried International Sculpture Show & Sale
Benefiting Participating Libraries
Sculptureworks, Inc. • P.O. Box 331084 * Fort Worth, Texas 76163
Sculpture Along The Trinity is a production of Sculptureworks, Inc. a nonprofit 501 (c) (3) corporation

TURKEY
Discover the best—in style. Hike to remote ruins, balloon over Cappadocia, sail the Turquoise Coast. Luxuriate at Four Seasons Hotel Istanbul.
SMALL GROUPS. FREE VIDEO AND BROCHURE.
INCA *(Inca Floats, Inc.)*
1311-ST 63rd Street, Emeryville, CA 94608
510-420-1550 incafloats@aol.com

VIXEN HILL GAZEBOS
www.VixenHill.com

Discover our wide selection of modular, cedar Gazebos and screened GardenHouses, engineered for easy assembly by the non-carpenter.
Send $4 for our 22-page color catalog with pricelist.
Vixen Hill, Dept. SM-8, Elverson, PA 19520 • 800-423-2766

Highlights [p. 38]

"Heroic Relics: The Art of Robert Cottingham" by Jacquelyn Days Serwer, *American Art*, National Museum of American Art, Smithsonian Institution, Summer 1998

The Object at Hand [p. 44]

"Zippo Lighter Collectors' Guide," Zippo, 33 Barbour Street, Bradford, Pennsylvania 16701

Zippo Website: www.zippomfg .com

Snowmaking [p. 50]

"No Snow? No Problem!" by Janet Nelson, *Ski Impact*, January 1990

Vermont Agency of Natural Resources Website: www.anr.state.vt.us

American Skiing Company Website: www.peaks.com

Edo Art [p. 60]

Edo: Art in Japan 1615-1868 (catalogue) by Robert T. Singer, National Gallery of Art, 1998

Japan: The Shaping of Daimyo Culture 1185-1868 by Yoshiaki Shimizu, National Gallery of Art, 1988

"Seven Centuries of Samurai Treasures Come Calling from Daimyo Japan" by Bennett Schiff, SMITHSONIAN, November 1988

Christmas Laundry [p. 73]

Cranberry Christmas by Wende and Harry Devlin, Parents' Magazine Press, New York, 1976

Buffalo Soldiers [p. 82]

Black Valor: Buffalo Soldiers and the Medal of Honor, 1870-1898 by Frank N. Schubert, Scholarly Resources (Wilmington, Delaware), 1997

The Buffalo Soldiers: A Narrative of the Negro Cavalry in the West by William H. Leckie, University of Oklahoma Press, 1967

Blacks and the Military in American History by Jack D. Foner, Praeger (New York), 1974

In Their Own Words: Warriors and Pioneers, collected and edited by T. J. Stiles, Berkeley Publishing Group (New York), 1996

"Due Recognition And Reward" by David Maraniss, *Washington Post Magazine*, January 20, 1991

Coots [p. 98]

Rails: A Guide to the Rails, Crakes, Gallinules and Coots of the World by Barry Taylor, Yale University Press, 1998

"American Coot" by Ray T. Alisauskas and Todd W. Arnold, *Migratory Shore and Upland Game Bird Management in North America*, International Association of Fish and Wildlife Agencies (Washington, D.C.), 1994

The Coot and the Moorhen by Jon Fjeldsa, av-media (Copenhagen), 1977

Life Histories of North American Marsh Birds by Arthur Cleveland Bent, Smithsonian Institution, Government Printing Office, 1926

Star Parties [p. 112]

Beginner's Guide to Amateur Astronomy by David Eicher, Kalmbach Books (Waukesha, Wisconsin), 1993

Southwestern Consortium of Observatories for Public Education Website: www.as.utexas.edu/mcdonald/scope/scope.html

Astronomy and Communities: The Impact of Lighting Practices by David Burstein, Timothy Hogan, Michael Kroelinger, Arizona State University, 1983

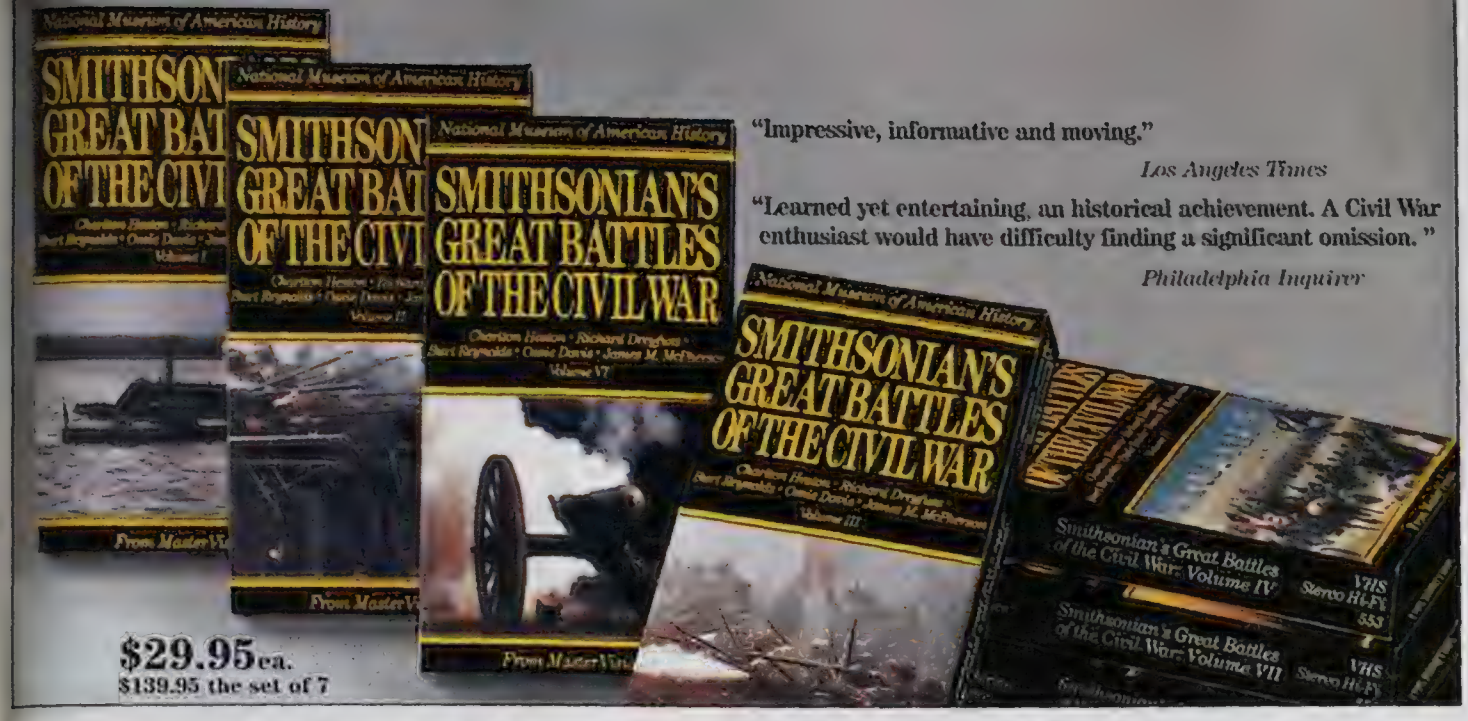
Charles Ponzi [p. 134]

Ponzi! The Boston Swindler by Donald H. Dunn, McGraw-Hill, 1975

The Rise of Mr. Ponzi by Charles Ponzi, Charles Ponzi, Publisher (New York City), 1935

Internet Fraud Watch, National Consumers League's National Fraud Information Center, 1-800-876-7060, Website: www.fraud.org

Federal Trade Commission Website: www.ftc.gov


"Impressive, informative and moving."
Los Angeles Times
"Learned yet entertaining, an historical achievement. A Civil War enthusiast would have difficulty finding a significant omission."
Philadelphia Inquirer
$29.95 ea.
$139.95 the set of 7

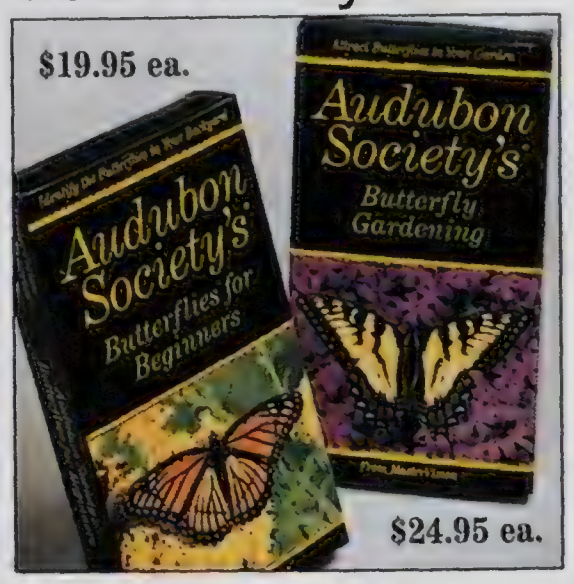
Great Battles of the Civil War

The Critically Acclaimed New Video Series from the Smithsonian

A visually stunning provocative new video series puts you on the battlefield for a sweeping look at the military, political and social history of the Civil War. Had there been television news then it would have looked like this, with the added benefit of modern analysis and production techniques. The seven-volume, nine-hour series is narrated by Richard Dreyfuss, with readings by Charlton Heston, Burt Reynolds, Ossie Davis and others, and on-camera appearances by Chief Historical Advisor Dr. James M. McPherson and other distinguished historians from West Point, Annapolis, VMI and the Citadel. Comprehensive and compelling, *Smithsonian's Great Battles* is a must for history buffs, students or anyone interested in learning about the US.

Volume I—Ft. Sumter * First Manassas * Ft. Donelson * Ironclads and the Navies * Shiloh. 60 minutes
Volume II—The Battles of New Orleans and the Mississippi River * Shenandoah Valley * Second Manassas. 67 minutes
Volume III—Antietam * Corinth * Perryville * Fredericksburg * First Drive on Vicksburg. 69 minutes
Volume IV—Stones River * Chancellorsville * Brandy Station * Gettysburg. 76 minutes
Volume V—Sieges of Vicksburg and Charleston * Chickamauga * Chatanooga and Lookout Mountain. 84 minutes
Volume VI—New Market * The Wilderness and Spotsylvania * Mobile Bay * Battles for Atlanta. 95 minutes
Volume VII—Destruction of CSS Alabama * Cedar Creek* Franklin * Fort Fisher * Siege of Petersburg * Bentonville * Appomattox. 86 minutes

New Butterfly Videos



Audubon Society's Butterflies for Beginners is an easy-to follow, informative introduction to the butterfly's biology and lifecycle, with up-close looks and identification tips for 33 of the most common and wide-ranging North American species. 64 minutes

Audubon Society's Butterfly Gardening is a comprehensive video introduction to 25 of the best commercially-available butterfly attracting plants, with profiles of 60 of the classic North American garden butterflies that frequent them. 92 minutes

CONTENTS
Butterflies for Beginners: ◆ Butterfly Biology and Lifecycle ◆ Butterfly Gallery—33 North American butterfly species ◆ Raising Butterflies from Caterpillars ◆ A Note about Butterfly Collecting
Butterfly Gardening: ◆ Gardening for Butterflies Basics ◆ Plant Gallery—25 common garden plants ◆ Butterfly Gallery—60 classic North American butterflies ◆ Raising Butterflies in your Garden

Audubon Society's VideoGuide To Birds of North America-I
Audubon Society's VideoGuide To Birds of North America-II
Audubon Society's VideoGuide To Birds of North America-III
Audubon Society's VideoGuide To Birds of North America-IV
Audubon Society's VideoGuide To Birds of North America-V
$29.95 ea.
$139.95 the set of 5

SEE, HEAR AND IDENTIFY 505 BIRDS BY VIDEO

"A skillful mix of video and stills that will delight and inform." —*New York Times*
"A fine investment and an important addition to printed bird guides." —*Philadelphia Inquirer*
"Enthusiastically recommended... The best videos for the identification of American birds." —*Library Journal*

Audubon Society's VideoGuide to Birds of North America contains bird sights and sounds on five videocassettes for simple and accurate identification of each of 505 species that breed in North America. Moving pictures show each bird's markings, in its natural habitat, with bird calls and sounds that complement informative narration and stunning visuals.
Whether you're an expert birder or simply enjoy identifying the birds that gather at your backyard feeder, the *Audubon Society's VideoGuides* promise hours of pleasure.

Volume I: 116 species of loons, ducks, pelicans, hawks, vultures, falcons, game birds and others. 94 minutes
Volume II: 105 species of water birds, including herons, egrets, cranes, terns, alcids and others. 78 minutes
Volume III: 77 species of doves, cuckoos, owls, hummingbirds, swifts, woodpeckers, others. 61 minutes
Volume IV (Songbirds I): 98 species of flycatchers, larks, nuthatches, creepers, wrens, thrushes, waxwings, shrikes, thrashers, vireos, others. 75 minutes
Volume V (Songbirds II): 109 species of warblers, orioles and blackbirds, tanagers, grosbeaks, finches, buntings and sparrows, and others. 80 minutes

Call Now to Order (24 hours, 7 days)

1-800-876-0091

MC/Visa/Amex or send check/money order (no cash please) with coupon to:

SMITHSONIAN MAG/MasterVision
PO Box 51790, Livonia MI 48151
Please send me:

SMITHSONIAN'S GREAT BATTLES VIDEOS
Volume I ____ Volume II ____ Volume III ____
Volume IV ____ Volume V ____ Volume VI ____
Volume VII ____
I've ordered _____ Civil War Tapes @ $29.95 = _____
Special offer! 7-Volume Set! _____ @ only $139.95 _____

AUDUBON SOCIETY'S VIDEOGUIDE TO BIRDS
Volume I ____ Volume II ____ Volume III ____
Volume IV ____ Volume V ____
I've ordered _____ Bird tapes @ $29.95 = _____
Special offer! 5-Volume Set! _____ @ only $139.95 _____

AUDUBON SOCIETY'S BUTTERFLY VIDEOS
I've ordered :
_____ Butterflies for Beginners @ 19.95 = _____
_____ Butterfly Gardening @ 24.95 = _____
Total tape order _____
Shipping/handling $5.00 per order _____
NY, MI residents add sales tax _____
Total $_____
Please check card ☐MC ☐Visa ☐Amex
Card# _____
Exp____/____Signature_____
Name_____
Address_____
City_____State___Zip_____

SMITHSONIAN STUDY TOURS

The Smithsonian Traveler

Credit Cards Accepted!
Smithsonian•Discover
VISA•MasterCard

Call or write for your FREE **Smithsonian Study Tours** catalogue, featuring more than 300 educational tours to 250 exciting destinations in the United States and abroad!

Smithsonian Study Tours offer unparalleled educational travel opportunities. Enjoy traveling with engaging study leaders and fellow Smithsonian Associates.

International Tours

City Interludes *Throughout the year* Extended stays in some of the world's great cities: Venice, Florence, Shanghai, Hong Kong, Kyoto, Vienna, Prague, Krakow, St. Petersburg and Moscow.

Countryside Tours *Throughout the year* Relaxing journeys to France, England, Scotland, Wales, Austria, Switzerland, Italy, Hungary and the Czech Republic.

Island Voyage: The Leeward and Windward Islands (including the Grenadines) *February 14-21* Aboard the *Yorktown Clipper.*

Arabian Gulf Voyage *March 9-21* Aboard the *Sea Goddess II.*

The Legacy of Sicily *March 10-21*

Voyage to West Africa *March 19-April 1* Aboard the *Clelia II.*

Golden Temples and Princely Palaces: From Singapore to India *March 29-April 14* Aboard the *Seabourn Spirit.*

Amazon and Orinoco Rivers *April 3-17* Aboard the *Levant.*

Classical Greece at Easter *April 4-17*

Spring Splendors of Greece and Turkey *April 5-19* Aboard the MS *Bremen.*

The Dutch Waterways and Belgian Countryside *April 12-25* Aboard the MS *Switzerland.*

Naples and the Amalfi Coast (Italy) *April 18-29*

Jordan and Syria *April 18-May 1*

Vanishing Gorges: China's Yangtze River *April 20-May 4*

Mysteries of Morocco *April 24-May 8*

Splendors of Italy *May 6-18* Aboard the MS *Bremen.*

Cruising Norway's Coast: The Fjords to the Arctic Circle *May 12-23 and September 2-13* Aboard the MS *Kong Harald.*

French Waterways: From Paris to Burgundy *May 21-June 1* Aboard the *Anacoluthe.*

U.S. & Canada Tours

Smithsonian "Anytime" Weekend (Washington, D.C.) Bring your family to see the *Star Wars* exhibition and enjoy other free activities on the Mall. Packages begin at $222 for two persons for two nights, and include a private tour of the Castle, an IMAX film screening and much more.

Virgin Islands Underwater Treasures *January 20-25*

Canadian Rockies Winter Weekend *January 29-February 2*

South Florida: Jewels of the Keys *February 28-March 8*

NEW! **Death Valley (California)** *March 11-19*

Antebellum South: New Orleans to Natchez *March 12-19*

Hawaii's Trails and Reefs *March 14-25*

Big Bend Natural History (Texas) *March 23-31*

The Colonial South: Jacksonville (Florida) to Charleston (South Carolina) *April 3-10* Aboard the *Nantucket Clipper.*

NEW! **ABC's of Oriental Rugs (New York City)** *April 8-11*

NEW! **Springtime in Austin and San Antonio (Texas)** *April 21-28*

NEW! **American Snapshots: Amelia Island (Florida)** *April 22-25* **Annapolis (Maryland)** *May 6-9* **Amish Country (Ohio)** *May 13-16* Three-night, all-inclusive excursions to the historic towns and working communities that are the fabric of our national heritage.

NEW! **Midway Atoll National Wildlife Refuge (Hawaii and Midway Islands)** *April 30-May 9*

Smithsonian Seminars

Concentrated study of specific topics:

Philadelphia's Founding Art Collectors *March 18-21*

Civil War: The Vicksburg Campaign (Mississippi) *March 24-28*

The Art and Spirit of Georgia O'Keeffe (Santa Fe, New Mexico) *April 21-25*

NEW! **Oxford/Smithsonian Cruise (Eastern Mediterranean)** *April 27-May 7* Aboard the MTS *Arcadia.*

A Sampling of Learning Adventures for Smithsonian Associates

To request a catalogue or brochure, please call (202) 357-4800. For all other information, call (202) 357-4700; or write to The Smithsonian Associates, MRC 702, Washington, DC 20560

New Orleans Jazz and Heritage Festival *April 28-May 2*

The Wright Way: The Career of Frank Lloyd Wright (Pittsburgh) *May 6-9*

Arts and Crafts of the Pacific Northwest (Seattle, Washington) *May 12-16*

Civil War: Shiloh (Tennessee) *May 19-23*

Southwestern Culture and Cuisine (Santa Fe, New Mexico) *June 8-13*

Spoleto Festival (Charleston, South Carolina) *June 8-14*

Hawaii Volcano Adventure *June 11-16*

Odyssey Tours

Moderately priced tours with several departure dates in 1999 for more than 20 study tours and cruises:

Sojourns Stays in one place for a week or more to explore the area's history and culture. Destinations include the French Riviera, Greece, Turkey, Washington, D.C. and Santa Fe, New Mexico. Tours are available year-round.

Cruises Many new cruises to choose from, such as Istanbul to Rome, Australia and the Java Sea, Baltic Sea Cruise, Hawaii Cruise, and Imperial Russian Waterways.

NEW! **Paradors of Andalusia** 12-night tours in *January, February and March*

For a Smithsonian Odyssey Tours brochure, call 1-800-932-8287.

Visit us on-line at:
www.si.edu/tsa/sst

Finally, a place on the Web where kids can find...

- feature articles
- facts & photos
- message boards
- fun and challenging games
- *Cricket* and *Muse* stories too!

The sky's the limit, and it's all at Kids' Castle!

www.smithsonianmag.si.edu

and click on Kids' Castle

SMITHSONIAN (ISSN 0037-7333) is published monthly by the Smithsonian Associates, 900 Jefferson Drive, Washington, DC 20560.

© Smithsonian Institution 1998. All rights reserved. Reproduction in whole or in part without permission is prohibited.

Editorial offices are at 900 Jefferson Drive, SW, Washington, DC 20560 (202-786-2900). Advertising and circulation offices are at 420 Lexington Ave., New York, NY 10170 (212-490-2510). **Subscription Prices:** United States and possessions: $24 a year payable in U.S. funds. Canada and all other countries: add $13 (U.S. funds) for each year. 80 percent of dues is designated for magazine subscriptions. Current issue price is $4 (U.S. funds). Back issue price is $5 (U.S. funds). Periodical postage paid at Washington, DC and additional mailing offices. **Mailing Lists:** From time to time we make our subscriber list available to companies that sell goods and services by mail that we believe would interest our readers. If you would rather not receive such mailings, please send your current mailing label, or an exact copy, to: SMITHSONIAN, Mail Preference Service, P.O. Box 420311, Palm Coast, FL 32142-0311. **Subscription Service:** Should you wish to change your address, or order new subscriptions, you can do so by writing SMITHSONIAN, P.O. Box 420311, Palm Coast, FL 32142-0311, or by calling 1-800-766-2149. Postmaster: Send address changes to SMITHSONIAN, P.O. Box 420312, Palm Coast, FL 32142-0312. Printed in the USA.

THE LAST PAGE

The Backseat Driver That Sits In Front

BY LEWIS M. SIMONS

If you and your spouse are always arguing about why you get lost, maybe you need a car that tells you where to go

AFTER 30 YEARS OF MARRIAGE, my wife and I still drive each other crazy. Literally.

It goes like this. I get behind the wheel (it's always me, because she hates to drive), she gets in the passenger seat, and after five minutes on any new road (not to mention some old ones) we're lost.

She: "It's because you were going too fast."

Me: "It's because you gave me the wrong directions."

From this point on, it's all downhill. And it happens, to put it in approximate terms, all the time.

So imagine our delight recently at the discovery that technology has found a way to help us out. We were in Florida. The woman at the airport car-rental counter mentioned that our vehicle came equipped with an "onboard navigation system" that would all but guarantee we'd never get lost.

Over the next six days, we came to love the little black box with the glass screen and buttons between our seats. It resembled those game things kids are always poking madly. At the push of a button, we scrolled to (a) our destination city and (b) the street and the desired address. This, I should add, we did before putting the car into gear. In a few seconds, a little map jiggled into place on the screen, showing our car as a yellow triangle, and we started out.

Suddenly, we both froze. A flat male voice spoke from the box: "Right turn ahead!" A chubby yellow arrow filled the screen and shrank to a stubby dash as we neared the intersection. Two sharp beeps, turn complete, arrow gone. Another map appeared on the screen. Our little triangle—guided from the heavens by a satellite!—continued traveling jauntily down the road.

This superior guidance system gave us a new lease on the driving life. Conversation returned to topics other than speed, direction, location and being late. I took to responding to the system's metallic commands with, "Thank you, George."

Only once did we squabble, but this time it was us against the box. It was on one of those rare occasions when we knew a shortcut. The computer preferred us to stay on the main road. We bypassed its instruction. "Make legal U-turn," the voice insisted. Again we ignored it and continued on our merry way.

Now what, we wondered. This was man (and woman) against machine, pragmatism against computer logic, the mind versus the microchip. Moments later, the box gave up. Threw in the towel. Saw things our way. "Rerouting destination," it sniffed. And a new map miraculously appeared on screen. How courteous, I thought. How decent.

A few days after we got home and back in our own car again, we missed the turnoff to a mall we'd visited dozens of times before.

She: "Why weren't you watching the signs?"

Me: "Why me? Why weren't you?"

Outburst.

Solution-oriented, we carry on. A notebook in the glove compartment now lists frequent destinations with detailed directions, and we've begun to think seriously about buying a new car with an onboard navigation system. No, we don't need a marriage counselor. We need George.

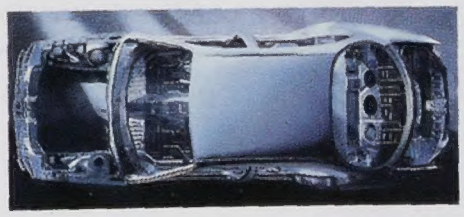
DON MORRIS

There was a lot of crumpled sheet metal.

A lot of smashed parts. But

Ford Taurus walked away from government front crash tests with the only five-star rating ★★★★★

in its class.* That's the highest rating you can get.

Sure, it's a historic first. But then, what else would you expect from a car  that's built to last?

Ford Taurus

*Second Generation airbags.** *Energy-absorbing crumple zones.*
Side door intrusion beams. *3.0-Liter V6.*

Built Ford to Last

1-800-258-FORD or
www.fordvehicles.com

*Driver and passenger front crash test. Government data only useful in comparing vehicles within 500 pounds. Class is medium cars starting under $ 20,000.
**Always wear your safety belt and secure children in the rear seat.

Mail-in Rebates
$50 back on MultiPASS C5500 or $30 back on C3500.
Limited time offer. See dealer for details.

Canon's multifunction printers. Because leadership is more than skin deep.

Print photo quality

Just add our optional Photo Ink to get the only true photo-quality multifunction printers anywhere.*

Fax

Copy

Scan

You don't have to peel back many layers to see that Canon's family of multifunction printers all print, copy, fax and scan in one machine. With exceptional quality and performance. So, the fact that we lead this industry isn't too surprising—not when you consider our 60 years of imaging expertise. We were the very first company to introduce both 4-color and Photo-Ink-capable multifunction printers. In fact, we created every major innovation in this category. So call 1-800-OK-CANON or visit www.ccsi.canon.com/leader. And before long, one of these champs will make your work a thing of beauty. **See what we mean.™**

The MultiPASS C5500. Make your business look smart in brilliant color.

State-of-the-art performance.

Photo-realistic color printing.

Color copies without a PC.

24-bit, 600 dpi color scanning.

Plain-paper Bubble Jet™ fax.

The MultiPASS C3500. Picture-perfect color printing and a whole lot more.

State-of-the-art performance.

Photo-realistic color printing.

Plain-paper Bubble Jet fax.

Convenient grayscale copies.

400 dpi grayscale scanning.

The MultiPASS L6000. Dazzling laser output that means business.

600 dpi laser printing.

Fast plain-paper laser fax.

600 dpi grayscale copies.

600 dpi grayscale scanning.

Photo Realism™

bring missing children HOME program

*True photo-quality with optional Photo Ink is not available on the L6000. Output shown printed using optional Photo Kit, sold separately. "Safari Inc." is a fictitious company. Any resemblance to other organizations is coincidental. ©1998 Canon Computer Systems, Inc. Canon is a registered trademark and MultiPASS, Bubble Jet, PhotoRealism and "See What We Mean" are trademarks of Canon Inc. In Canada, call 1-800-263-1121.

Canon